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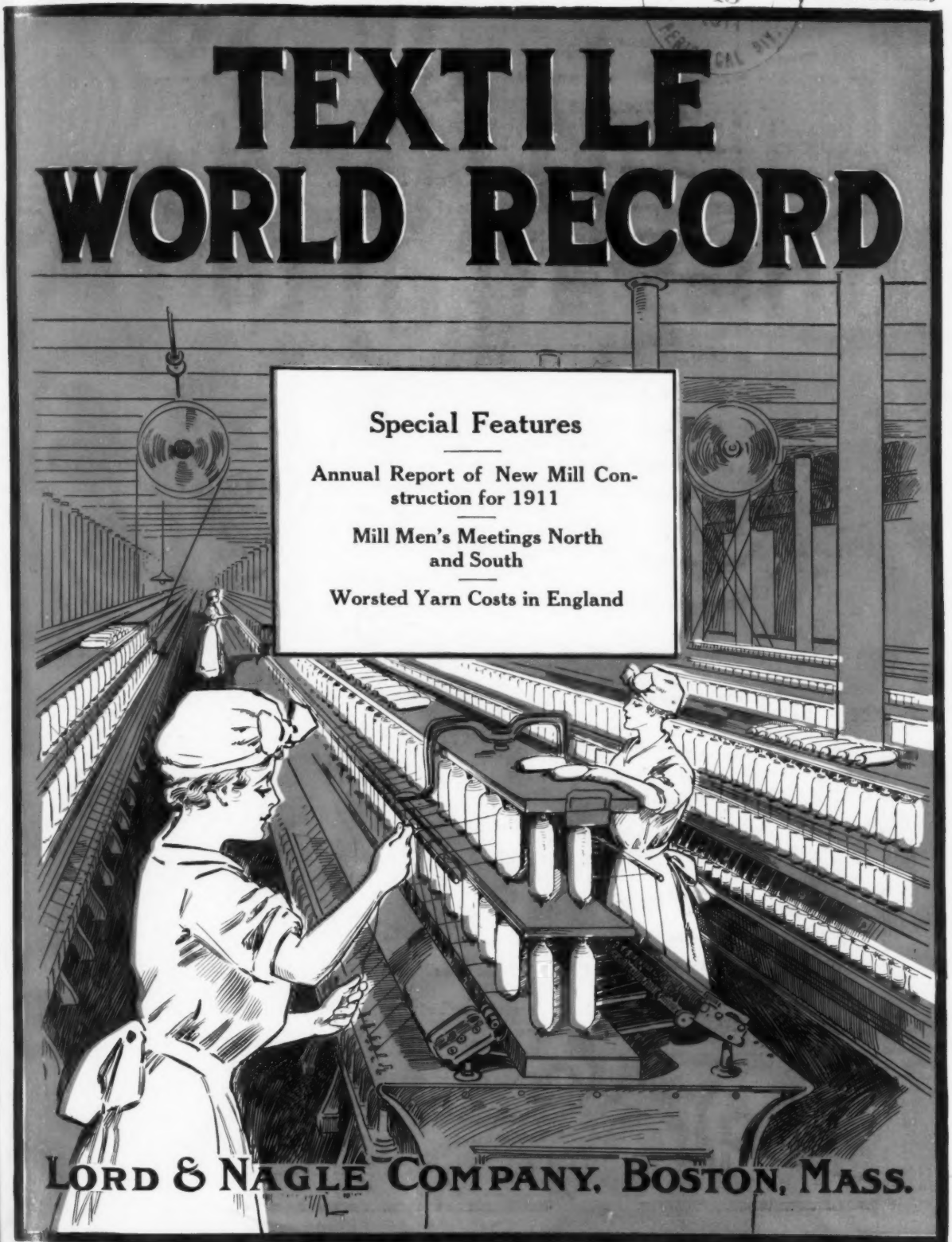

Special Features

Annual Report of New Mill Construction for 1911

Mill Men's Meetings North and South

Worsted Yarn Costs in England

LORD & NAGLE COMPANY, BOSTON, MASS.

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The TEXTILE-FINISHING MACHINERY CO.

Howard Building, Providence, R. I.

Builders of

Bleaching, Mercerizing, Dyeing, Drying, Printing and Finishing Machinery

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It is impossible to fully cover the machinery we build in an advertisement or to even mention the many improvements or new machines we are constantly designing and building for the great variety of processes necessary in treating textile fabrics for the numerous purposes to which these are put in modern life. We have expert engineers and expert textile finishers in our employ. If you will write stating as clearly as possible the class of goods you wish to finish, the amount of yards or pounds per day, the width of woven goods, etc., full information will be sent to you, or one of our experts will call upon you and go over the question of equipment in person. We are the largest builders of this class of machinery in the United States.

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All Kinds of Copper Color Kettles

with either single or double agitators or without agitators

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fitted with Textile Patent Spiral Scoops

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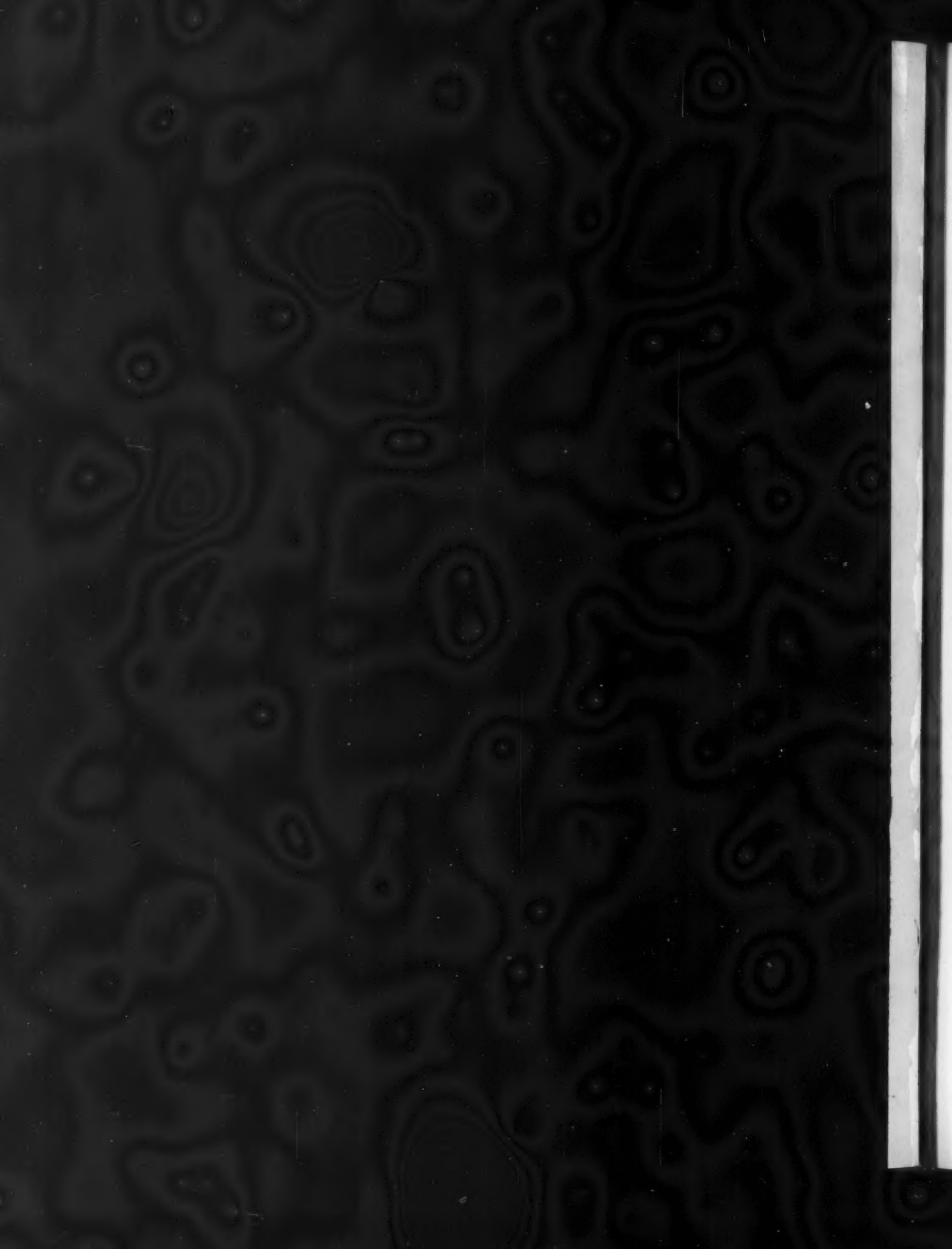

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Correspondence

We solicit correspondence on textile subjects. Articles accepted will be paid for. Name and address must always be given, not necessarily for publication. Subscribers are invited to make free use of our Questions and Answers Department; correspondence is strictly confidential.

HOWARD & BULLOUGH
AMERICAN MACHINE COMPANY LTD.

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A GREAT IMPROVEMENT IN CARDING.

This device consists of a Roller covered with Special Clothing placed underneath the Lickerin, and revolving slowly in the same surface direction as the Lickerin.

A Doffing Comb placed in front of the Roller removes from same the substances which the Roller eliminates from the cotton, which then fall to the floor amongst the droppings.

This Device has no high speed parts to cause wear, and is so simple that derangement is impossible, consequently requires very little attention.

The object of this appliance is to remove motes, leaf, short fibre and foreign substances from the cotton, before it reaches the Cylinders and Flats.

This naturally increases the life of the Card Clothing, as it is not being subjected to as rough usage as would be the case if the substances removed by the Duplex Device were allowed to pass on to the Cylinders and Flats, besides which, the Clothing is at all times in much better condition to give superior Carding, and requires much less Grinding.

The quality of the Carding is very much improved by the removal of the objectionable substances referred to, and will produce a much better quality of yarn.

By this Device, without altering the Card Settings, the amount of waste taken out may be varied considerably, according to the class of cotton and quality of work desired.

Production is increased considerably, owing to the cleaner condition of the Cylinder and Flats.

DUPLEX CARDING DEVICE
HARDMAN'S PATENT

The Cylinder, Doffer and Flat Strips can be put into the regular mixing, as they contain less short fibre and foreign matter.

Flat, Cylinder and Doffer Strips can be carded without the need of frequent stripping, and a remarkably good quality of work obtained from same.

A very good Combed quality can be obtained from Flat Strips by taking out 15 to 20 per cent. at the Comber, and after making allowance for the loss in Carding, a net amount of Combed work of 60 to 65 per cent. is obtained.

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TEXTILE WORLD RECORD

DECEMBER, 1911

Monthly Comment.

The Duty on Silk Noils

The Treasury Department has again postponed the date for which silk noils, whether combed or uncombed, were to be assessed a duty at the rate of 35 cents per pound. This decision of the Department has called forth strenuous opposition from the trade and since the delegation of manufacturers presented their case to the Department last month it has been decided to grant a further extension of 30 days in order that the proper classification of this merchandise may be made the subject of further investigation. The Department's previous instructions will not, therefore, take effect until December 16, and at that time there is, of course, the possibility of a change of opinion.

The Boston Wool Trade Association

A movement that had been discussed in the wool trade for some time has taken definite shape in the organization of the Boston Wool Trade Association. The object of this association, as stated in its constitution, will be the promotion of the interests of those persons, firms and corporations engaged in the purchase and sale of wool; to cooperate for the improvement of conditions relating to the business; to establish uniformity in the customs and usages of said business, and to foster a frank and friendly intercourse among its members and with those with whom they have dealings.

It is believed that by cooperation and concerted action some trade abuses may be corrected and some reforms made possible. The first meeting was held at the office of Brown & Adams, and the following officers were elected: Jeremiah Williams, president; Jacob F. Brown, vice-president; G. W. Benedict, secretary-treasurer; W. R. Cordingley, William E. Jones, Summit L. Hecht, Arthur E. Gill and Ludwig Eiseman, executive committee; Thomas A. Crimmins, Charles F. Avery, Albert W. Elliott, Abraham Koshland, and Matthew Luce, arbitration committee. There was considerable discussion as to the purposes and aims of the association and what might be accomplished.

Definite steps were taken to ascertain the amount of unsold wool on hand at least once a year and the following resolution covering this point was unanimously adopted:

That each firm of corporation represented in the Boston Wool Trade Association, shall, on the last Saturday of December of each year sign a true statement of the amount of foreign and domestic wool they haye on hand unsold at that time belonging either to themselves or to consignors, stored in Boston or in the immediate vicinity of Boston, and mail this statement promptly to a firm of chartered accountants (to be selected) who shall receive same under a written agreement to keep all details absolutely confidential, but shall report the totals of each class to the secretary of the Wool Trade Association on or before the fol-

lowing Tuesday noon. The secretary shall give these figures at once to the trade papers and this shall be the authorized statement of the stock of wool in Boston as reported by the Boston Wool Trade Association. In the event of any house not reporting its stock and in order that the summaries may not be misleading, it shall be decided by the executive committee whether the names of such houses not reporting shall be published or whether a list of houses reporting shall be published, or both.

Another point receiving consideration was the question of preparation of wool for market. The Textile World Record has many times in the past emphasized the importance of reform in this direction and pointed out the great injury to manufacturers resulting from wool improperly tied. This evil has been to a considerable degree eliminated by the action of some of the larger wool buyers. The association goes a step further and by emphatically declaring that wool put up otherwise than in the manner specified shall be considered unmerchantable and subject to a discount of at least 1 cent per pound, ought to put an end to the practice. These commendable resolutions are as follows:

Whereas, It is the desire of this association to increase the value and popularity of all American grown wool with the manufacturers and to encourage not only the raising of better wool, but to improve the manner in which it is prepared for market; and

Whereas, The wool grown east of the Mississippi River and also in the States of Minnesota, Iowa and Missouri comes in more direct competition with foreign wool than that of other States; and

Whereas, It is necessary to notify growers and store-keeps as early as possible regarding changes from present methods; and

Whereas, It is deemed advisable to establish a standard whereby all parties interested may be on an equal basis, it is therefore

Resolved, That fleeces grown east of the Mississippi River and also in the States of Minnesota, Iowa and Missouri, shall not be considered merchantable unless rolled into a firm bundle, flesh side out, free from tags or parts of other fleeces, tied with a hard glazed twine not heavier or larger than what is known in the twine trade as size 4 1/2, 3 ply India, using not more than three single strings each way of the fleece and all knots firmly tied. Wool put up otherwise than in this manner shall be considered unmerchantable and shall be subject to a discount of at least one cent per pound.

There are to be two classes of members in the organization, namely, the active and associate. Those eligible to active membership are the members of firms in the wool business in the city of Boston or officers in corporations engaged in the wool business, also accredited agents of any firm or corporation elsewhere located which maintains an office in Boston. Those who are interested in the raising, merchandising or the manufacture of wool may become associate members and entitled to all the privileges of membership except voting and holding office.

A Big Bonus for an Improved Process

The New Zealand Government offers a bonus of $60,000 for improvements in connection with the extraction and dressing of fiber for the New Zealand hemp plant and the utilization of the by-products obtained during the process for extracting the fiber. This large sum may be divided according to the terms of the circular and different rewards are offered for different processes as follows:

1. A process of extracting and dressing the fiber of New Zealand hemp (Phormium tenax), whether by machinery or otherwise, whereby there shall be obtainable (a) a greatly improved quality of fiber marketable at a higher price, or (b) a substantial reduction in the cost of producing the fiber.

2. Any such process that shall produce a fiber fit for use in manufactures other than rope and twine spinning.

3. Any such process that shall render unnecessary any of the present operations involved in extracting and dressing the fiber, such as stripping, paddocking, or scutching.

4. Any improved method of separating the green envelope or the flinty or colored matter from the green leaf of the phormium plant so as to produce a strong white fiber the whole of which can be saved with little or no tow or waste.

5. Any means whereby the by-products obtained during the processes of extracting and dressing New Zealand hemp-fiber—such as the gum, dye, stripper-slips, tow-dust, or waste vegetable matter—shall be converted into a marketable commodity.

The applications for the bonus must be addressed to the President of the New Zealand Flaxmillers' Association and must reach him before Nov. 30, 1913. The United States Department of Agriculture, Bureau of Plant Industry, Washington, D. C., has circulars giving particulars of the offer and the New Zealand Government is desirous that American inventors interested in textile machinery should look into this matter with a view of competing for the rewards.

Cotton Goods in the Philippines

Last month we gave a comparative summary of the imports of cotton goods into the Philippines for the nine months of each of the past three years. It showed the rapid increase in the proportion of that trade supplied by the United States, the American supply jumping from 7.3 per cent. in 1909 to 40.2 per cent. in 1911. When preparing that statement our only information as to the rate of duty imposed on cotton goods imported into the Philippines from other countries was the data given in our October, 1909, issue, where we calculated the Philippine duty on cotton prints to be equivalent to 27 per cent. ad valorem. Desirous of giving more complete and detailed information on this point we applied to the Bureau of Insular Affairs and obtained the following statement showing the value of and duty collected on each class of cotton goods imported into the Philippines from the United States and other countries during the eleven months ending May, 1911:

Articles	United States	Other Countries			
Manufactures of	Value	Duty	Value	Amount	Duty rate ad valorem
Cloths	$3,218,356	$211	$3,437,746	$894,576	26. %
Blankets	16,097	.	33,699	14,252	42.3%
Knit goods	94,644	955	830,757	208,451	25.1%
Wearing apparel	156,457	5	70,319	15,940	22.7%
Gum-elastic textiles	22,273	1	3,508	865	24.7%
Handkerchiefs	23,204	1	152,031	37,037	24.4%
Laces	989	48	107,947	64,326	59.6%
Lamp wicks	1,235	2	4,773	1,156	24.2%
Piques	2,120	.	29,197	10,562	36.2%
Plushes, velvets, etc.	25	.	14,643	4,784	32.7%
Sheets and pillowcases	2,191	1	129	34	26.4%
Shoe and corset laces	3,987	.	3,714	1,056	28.4%
Tablecloths and napkins	291	.	1,520	390	25.6%
Thread	148,832	777	213,658	53,352	24.9%
Towels	11,249	3	44,562	11,658	26.2%
Trimmings, ribbons, braid, tape and galloons	1,187	.	59,956	18,471	30.9%
Tulles	10	1	11,465	4,021	35.1%
Waste cotton	16,382	.	13,786	1,340	9.7%
Waterproof textiles	1,884	.	1,563	392	25.1%
Yarn—					
Mercerized	9	.	131,517	33,025	25.1%
Unbleached	.	.	15,913	2,388	15. %
Bleached	67	.	314,696	47,222	15.1%
Dyed or colored	.	.	283,566	43,332	15.3%
All other manufactures	63,616	17	30,155	8,041	26.6%
Total cotton and manufactures of	$3,785,105	$2,022	$5,810,820	$1,476,671	25.4%

The negligible amount of duty collected on several classes of American goods was due, doubtless, to some technical failure to conform to the provisions of the law providing for free trade between the two countries.

Cost Finding in England and America

The average man who is more or less familiar with the conditions in the woolen and worsted manufacturing industry in this country is no doubt inclined to believe that the English manufacturer is ahead of us in matters of record and exact knowledge of facts concerning costs. The report of our well informed English correspondent into the matter of worsted yarn costs in England, which appears in another part of this issue, is particularly interesting, not only for the timely facts finally ascertained, but because the investigation showed the absence of much definite data that might reasonably be expected to exist. It appears that costs of individual lots are not usually recorded, but that the spinner depends on general results which are shown by the yearly or half yearly stock taking. Our correspondent assumes that American mills keep more careful and accurate records. This is

probably true in the case of the larger mills, but with the woolen and worsted industry taken as a whole, there is still much to be desired on this side of the ocean.

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Business Conditions

The National Association of Manufacturers, through its organ, "American Industries," has recently made a canvass of ten thousand business men representing all industries and in different sections of the country, concerning the present state of business and the future outlook. The summary of replies received from the textile industry is given in the accompanying table, the figures being percentages:

Industry	Improvements in Sales since Dec. 1910				Present Condition				Prospects for 1911			
	None	Slight	Fair	Marked	Poor	Fair	Good	Excellent	Poor	Fair	Good	Excellent
Cottons and Prints	42	23	32	3	34	49	9	8	32	46	17	5
Woolens	34	21	34	1	23	53	20	4	33	50	13	4
Worsteds	45	31	22	22	45	33	22	0	56	22	11	11

British Colonial Cotton

A report of progress in developing the growing of colonial cotton was presented at a recent meeting of the British Cotton Growing Association. In Southern Nigeria the Association has distributed selected seed to planters and guaranteed to purchase all the seed cotton thus produced, at a premium of 1/4 cent a pound, equal to 1 cent per pound of lint cotton. The purchases of cotton in Lagos by the Association amounted to 5,332 bales to the end of September this year, as compared with 5,514 bales for the corresponding period in 1910, and 11,762 bales in 1909. The report states that a very large crop of cotton is being produced in Mganda, so large that the steamers and lighters on Lake Choga are unable to carry it. Steps have been taken to provide additional transportation facilities. New gins are also being installed to handle the Uganda crop, which is estimated at 25,000 bales. The financial report of the Association showed $2,232,110 of the capital paid in, leaving a balance of $197,890 to be raised. The cotton mill operatives have contributed $89,205, leaving a balance of $56,595 to be raised in this way.

"Conditioned" Yarn Counts

Last February we called attention to a decision of the United States General Appraisers, which reversed the ruling of the collector at New York, the appraisers deciding that the duty on schappe silk yarn should be based on the "conditioned" count and not on the count of the yarn in the condition in which it happens to be when imported. The yarn involved in this case was imported by Max Bouchsein and invoiced as No. 200, but the appraiser on reeling it found the count to be No. 210 and assessed the higher duty as provided by paragraph 397 of the tariff law, under which the duty on numbers up to and including No. 205 is 50 cents per pound and 10/100 cent per number per pound additional; and on numbers above 205, 50 cents per pound and 15/100 cent per number per pound additional. The importer protested on the ground that the duty should be assessed in accordance with the "conditioned" count, that is, with 11 per cent. added to the absolutely dry weight. It appears that the yarn when reeled by the appraiser contained less than the 11 per cent. of moisture, for when tested by the United States Silk Conditioning Co., the "conditioned" count of the yarn in two bales was found to be No. 202 and No. 203 3/4 respectively. The General Appraisers decided that these numbers, 202 and 203 3/4, came within the limits of variation allowed for No. 200 yarn, and that the lower duty should be assessed on a basis of No. 200. The case was appealed to the United States Board of Customs Appeals, which last month handed down a decision affirming the decision by the General Appraisers, which fixes the conditioned count as the basis on which duties are to be assessed. The written opinion of the higher court discussed the process of conditioning at length, and as it deals with a question of much importance, we give the

opinion in full below. While there is no question as to the fairness of assessing the duty according to the conditioned count, the practice of allowing for a variation of 2 1/2 per cent. from the conditioned count does not seem so free from objection. When commenting on this case in our February issue we said:

The conditioning house found that the conditioned count of one lot was 203 3/4, and the Board decides that this comes within the limits of variation for No. 200 yarn, and accordingly orders the lower duty to be assessed. Why should any allowance be made for variation of the conditioned count when assessing duties on yarn? Is it to be the settled rule of the Treasury Department to deduct 2 1/2 per cent. from the conditioned count of imported yarn when the count is sufficiently close to the dividing line?

The Court of Customs Appeals makes no reference to this question of allowance. The opinion is as follows:

The yarn in question is valued at over $1 a pound, is a two-ply yarn, in the gray, and in skeins.

As appears above, the rate of duty upon such an importation depends upon the number indicating the size of the yarn of which it is composed, and this number is to be taken according to the metric or French system and is to refer to the size of the singles.

The yarn in question was described in the invoice as number 200 two-ply, which was the number certified by the spinner. But after an examination and report by the appraiser, the collector classified the same as number 210 two-ply, and assessed duty upon it accordingly.

The appellee protested against the ruling of the collector and contended that the yarn should be classified as No. 200 two-ply as invoiced. This protest was duly heard upon evidence by the Board of General Appraisers, and the protest was sustained. A rehearing was had upon the application of the Government, with additional evidence, and again the protest was sustained. The Government now prays for a reversal of that decision of the board.

As is above indicated, the contention between the parties relates entirely to the number which should be given the imported yarn according to the metric or French system, as prescribed by the paragraph.

The testimony shows that the method of finding the number of such yarn according to that system is as follows: A measured length of single yarn is reeled off and weighed, and this weight in grams is divided into the length in meters of the piece so weighed; the quotient thus obtained is the number sought. As appears from this statement, the greater the weight of the given piece the less will be the number and the lower the rate of duty under the provisions of the paragraph.

As has been stated, the duty upon such yarn is not assessed according to its weight alone, but also according to its number. This number, however, as has been explained, depends in part upon the weight of the piece of yarn which is selected as the sample for the computation. And the parties reach their point of difference in this case in coming to determine the method of ascertaining the weight of the selected measure of yarn.

The Government contends that the collector in taking the weight of this piece shall find its actual present weight in the condition of moisture in which it may happen to be when the calculation is made. The importer contends that the piece so weighed must first be "conditioned," and that its weight as taken by the conditioning process shall be accepted for the purpose of the calculation. The conditioning process is hereinafter explained. This defines the real issue between the parties in the case, namely, the different methods of ascertaining the weight of the given measure of yarn for the purpose of using it as a factor in the computation required by the metric system.

The testimony shows that the silk yarn in question naturally absorbs considerable moisture from the atmosphere, and the amount so absorbed changes, of course, according to the changing humidity of its surroundings. If the yarn is kept in a dry place it will lose moisture and weigh less, and if changed to a wet place it will absorb moisture and become heavier. It is said to be the custom to leave it for several days in cellars just before shipping it to this country, so that it may absorb moisture. This reduces the fuzz and makes the yarn smoother and sightlier. At the time of exportation it sometimes carries as much as 13 or 14 per cent. of its gross weight in moisture. When fully dried out, it carries a much less percentage of moisture.

In the manufacture of schappe yarn, the spinner sets the draft of his machine so as to turn out a given size of yarn, and a certificate as to the number goes with the invoice of the goods. But such a certificate is often only approximately correct, and may not be accepted by all of the parties dealing with the merchandise. Thereupon the parties may be compelled to ascertain the correct size of the yarn by the metric system, and in order to do so they must first ascertain the weight of a given piece of the yarn as above explained. It is easy to see that in the case of yarn which may absorb 13 or 14 per cent. or more of its own weight in moisture in wet surroundings, or retain less than half that much in dry surroundings, an element of considerable uncertainty is thereby introduced into such a calculation.

The testimony shows that this uncertainty was recognized many years ago by the silk trade as a disturbing factor entering into the sale and delivery of such yarns, and efforts were made to correct it. At first the yarn was weighed by hanging it in a room where the temperature and moisture were kept as nearly even as possible. But finally, it is said, the process of "conditioning" the yarn was adopted, first in Turin and afterwards in other places also. By this process a selected piece of the yarn is placed in an oven until all the moisture is expelled from it, then the weight of the

dry piece is taken, and to this weight 11 per cent. thereof is added as an allowance for normal moisture. The figure thus found is used as the divisor in the calculation above described. At first this fixed allowance was 10 per cent. of the dry weight, but afterwards it was advanced to 11 per cent. The witnesses in the case sometimes speak of this allowance as an arbitrary one, but the word is incorrectly used by them in that application, for the figure was not arbitrarily selected, but was the result of general observation and experience and was accepted as a normal element in such a calculation; that is, long-continued observation convinced the trade that 11 per cent. was the average percentage of moisture in schappe yarn under ordinary circumstances. And thereupon the trade, not universally but generally, adopted the rule that the yarn should be so conditioned for the purpose of calculating the number or size of the yarn in cases wherein the spinner's certificate was not accepted as final authority. The testimony shows that this rule was approved at a conference of the various silk associations held in Paris in 1900 and that this approval was received by the trade in general as an authority upon the subject. It is a fair conclusion from the testimony that after that time, if not before, this rule became in a general sense an implied term in contracts for the sale and delivery of schappe yarns unless negatived by some express or implied stipulation in the contract to the contrary. Many conditioning houses were established in Europe, although individual manufacturers often did their own conditioning by means of their own apparatus. Such houses dealt also with other silk products in addition to yarn, and much that has been said above would equally apply to such other products. It appears that at the time of the hearing before the board there was but one such establishment in New York, and that was the United States Silk Conditioning Co., a corporation doing business under the auspices of the Silk Association of America.

The testimony shows that some of the largest dealers in silk goods in Europe refuse to submit their differences to the arbitrament of conditioning houses and demand that their customers accept their certificates as final. But, on the other hand, it appears by a very clear and convincing preponderance of the testimony that the conditioning rule has been generally adopted by the trade, and that it has been so adopted because it was believed to be reasonable, stable, and necessary; and equitable between dealers in such yarns. Where in the assessment of tariff rates the duty depends upon the weight of an article it is the rule that such weight is to be found by taking the article in its condition at importation. Paragraph 404 of the act of 1909 especially applies this rule to silk. But where, as in this case, the purpose of weighing is only to ascertain by calculation the number indicating the size of yarn, and a selected piece of yarn is weighed for the purpose of such a calculation, a different problem presents itself. The weight of the yarn changes with different percentages of moisture in it, but the numbers indicating the size ought not to change according to such percentage of moisture.

The testimony shows such a general trade adoption of and acquiescence in the conditioning rule for finding the number according to the metric system that the reference to this system in paragraph 397 may fairly be held to have had the rule in contemplation.

The yarn in question was conditioned by the United States Silk Conditioning Co., above named, at the instance of the importer, and according to its finding and report the spinner's certificate was sustained and the yarn found to be No. 200 two-ply yarn. There seems to be no dispute about the correctness of this finding upon the basis of the conditioning rule; it is only the rule itself which is disputed by the Government.

In this view of the case, the decision of the board should be affirmed.

American Association of Woolen and Worsted Manufacturers

The annual meeting of the American Association of Woolen and Worsted Manufacturers was held in New York at the Waldorf-Astoria Hotel on December 8 while this issue was in press, so that we are unable to report the proceedings at this time. This association has accomplished a very practical work and has been remarkably successful in correcting many of the trade abuses which existed prior to its formation. It has taken an emphatic stand in regard to cancellations, piracy of styles and the settlement of trade disputes by arbitration. It has inaugurated and successfully carried out a system of credit reports. It has carefully abstained from political or tariff work and has confined itself strictly to problems concerning the marketing of goods. Its success in the past encourages the management to extend its sphere of usefulness still further.

Silk shipments from Japan during the year ended June, 1911, amounted to 147,713 bales. Of the total shipments 42,771 bales were destined for Europe and 104,942 bales for America.

In the city of Barcelona, Spain, there are located 742 textile establishments, of which 15 are devoted to the manufacture of cotton thread and yarn, 203 to making cotton cloth, 15 to woolen and worsted thread and yarn, and the balance to miscellaneous. The capital invested in this industry is $96,744,000 and the output is valued at $95,753,000.

The National Association of Hosiery and Underwear Manufacturers

The underwear section of the National Association of Hosiery and Underwear Manufacturers held its annual meeting at Reading the latter part of November and got down to "brass tacks" in discussing the question of prices, cancellations and other trade topics relating to the selling end of the business. Underwear buyers have been insistent upon revision of prices, because there has been some decline in the price of yarn. A great many cancellations have been made and more are threatened. Manufacturers feel that the demand for revision is unjust because the opening prices for underwear were reduced in anticipation of the decline in the price of yarn.

No hard and fast agreement was entered into, but different speakers urged the manufacturers to stand firm and make no reductions, for business is done on a very low margin of profit and if competition leads to slashing of prices the whole trade will be in a very unsatisfactory way.

The subject of cancellations aroused a lively discussion and some buyers appear to have achieved a reputation for this practice. It was suggested that these buyers could be reported to the secretary of the association and that he might notify the different members who the offenders were.

The question of trade marks and labeling the goods was discussed at some length. This practice, it was claimed, might minimize cancellations, as a jobber who was selling one brand could not readily discard it for another. This brought up the question whether the jobbers would be so ready to buy goods that were branded with the manufacturer's trade mark or whether they would not insist, as so many of them do now, on having their own brands and trade marks put on the goods. The commission houses and the jobbers came in for criticism and charges of unfair practice.

While no definite time was set for the next spring season it was the general opinion that June would be the date. There was not a large number present at the meeting, but they represented important mills.

The Textile Exhibition

The third textile exhibition under the auspices of the Textile Exhibitors' Association to be held next April in the Mechanics Building, Boston, will undoubtedly be the most complete affair of its kind ever held in the country. At this early date practically all the space on the main floor has been subscribed for by representative concerns in the textile industry and at the present writing the available open spaces consist of a total of about 4,000 sq. ft. out of nearly 60,000 in the original allotment.

Added departments of closely allied industries which have never been shown before will increase the interest and serve to strengthen the exposition. A department devoted to cement and concrete mill construction will show the up-to-date methods, and the entire department "B" in the basement has been subscribed for by the New England Association of Commercial Engineers, under whose direct supervision a power show, the first ever held independently, ought to be a great success, as it will consist of a great variety of motive power machinery as well as the adjuncts and auxiliary machinery connected.

In the balcony the finished textile products will be shown embracing made-up as well as goods from the mill, making the entire exhibition one which for completeness of detail will surpass anything heretofore attempted.

The National Association of Cotton Manufacturers holds its annual meeting in Mechanics Building during the exhibit as guests of this Association. Other associations have been invited, including 10,000 members of the Master Mechanics Association of America.

Manager Chester I. Campbell, who is in charge of all the arrangements, is at the present time in Europe in the interests of the Exposition and has promised to submit many novelties on his return. Communications for space should be sent to the Executive Office, 5 Park Sq., Boston, and while the exposition is some distance away the early applications for space have been so large that those contemplating exhibiting at this time are advised to get in touch with the management

at once or they are likely to suffer disappointment.

Great Britain's Textile Machinery Exports

For the 10 months ending with Nov. 1, the value of textile machinery from the United Kingdom to the other countries of the world was as follows, reckoned in pounds sterling for that period in 1909, 1910 and 1911:

	1909	1910	1911
Russia	£781,662	£716,377	£938,301
Germany	682,167	723,685	740,012
Holland	147,987	131,107	155,554
France	698,306	691,291	600,203
Other European Countries	1,400,453	1,082,857	968,551
China (inc. Hong Kong)	61,116	126,713	25,043
Japan	423,082	302,903	307,440
United States	542,569	906,484	395,887
Countries in So. America	305,427	292,688	374,900
British East Indies	1,542,150	1,025,284	812,000
Australia	22,687	43,553	43,549
Other Countries	268,579	222,673	217,259
Totals	£6,881,184	£6,265,615	£5,508,699

The totals show some falling off in the last year over the two preceding ones. The exports to the United States show a big drop, being less than one-half the amount for the corresponding period of last year.

The Textile World Record's Report of Mill Construction for 1911.

The record of new mill construction for 1911 shows that 208 new textile mills of various kinds were built or under construction in the United States during the past year. This is the smallest number reported for any year in the last decade, the next lowest being 222 in 1908. The record for the preceding years was 274 new mills for 1910, and 289 new mills in 1909.

In spite of this marked falling off in number, the record is much better than might reasonably have been anticipated, and taken in connection with the large amount of new construction undertaken by existing mills we consider that it is surprisingly good.

The decrease is largely in the cotton and woolen industries, although in the former the decrease in the number of spindles is not so marked as the falling off in the number of new mills. New knitting mills are very little below the average for ten years, and slightly above the average if the record years of 1904 and 1910 are excluded. New silk mills are greater than any year since 1907, and miscellaneous establishments, of which dyeing, finishing and printing works form the larger part, show a normal growth in these special lines.

In cotton mill construction, South Carolina leads all other states, having 80 per cent. of the spindles and looms in new Southern mills and giving the Southern group of states a slight actual gain over New England in new mill construction for the year, or 172,000 spindles in new mills in the South as

COMPARISON OF SPINDLES IN NEW COTTON MILLS FOR THE LAST ELEVEN YEARS.

	1911	1910	1909	1908	1907	1906	1905	1904	1903	1902	1901
New England	170,500	468,714	599,000	115,000	113,000	171,000	100,800	161,184	135,000	347,320	30,000
Southern States	172,000	214,028	527,528	91,193	294,745	294,956	97,290	55,472	281,782	490,256	259,360
Middle and Western	4,920	12,500	79,968	3,500	10,250	27,040	.....	.....	.....	25,000	2,064
Totals	347,420	695,242	1,206,496	209,693	417,995	492,996	198,720	216,656	416,782	862,576	291,424

NEW COTTON MILLS.

New England	No.	Spindles	Looms	
Connecticut	1	60,000	1,200	
Massachusetts	4	55,500	1,230	
Rhode Island	2	20,000	....	
Vermont	1	35,000	650	
	8	170,500		3,080
Southern States				
Georgia	1	20,000	500	
North Carolina	2	16,000	....	
South Carolina	5	136,000	3,900	
	8	172,000		4,400
Middle & Western States				
New Jersey	4	.....	25	
New York	1	.....	....	
Ohio	1	.....	....	
Pennsylvania	9	4,920	30	
	15	4,920		55

against 170,500 spindles in new mills built in New England. Four New England States built new cotton mills, and three Southern States added to their number of mills. The total number of spindles in all new cotton

NEW WOOLEN AND WORSTED MILLS.

New England	No.	1911	1910	1909	1908	1907	1906	1905	1904
Connecticut	1								
Massachusetts	2								
	—	3							
Middle States									
New Jersey	1								
New York	1								
Pennsylvania	10								
	—	12							
Western States									
Washington	2								
	—	2							
		17	31	47	22	25	56	38	45

mills is slightly less than 50 per cent. of the number in 1910, and approximately 25 per cent. of the record year, 1909. It is, however, greater than four of the years since 1900, due to the larger size of the establishments, and taken as a whole is gratifying in

NEW KNITTING MILLS.

New England	No.	1911	1910	1909	1908	1907	1906	1905	1904
Massachusetts	5								
Rhode Island	3								
	—	8							
Middle States									
Delaware	2								
Maryland	3								
New Jersey	2								
New York	11								
Pennsylvania	39								
	—	57							
Western States									
Illinois	4								
Indiana	1								
Kansas	1								
Michigan	2								
Ohio	2								
Utah	1								
Wisconsin	3								
	—	11							
Southern States									
Alabama	1								
Georgia	1								
North Carolina	3								
South Carolina	1								
Virginia	1								
	—	7							
		86	113	104	92	83	103	79	111

view of the high price of raw material and unsatisfactory condition of the goods market.

The woolen and worsted industries, more than any branch of textile manufacturing, have been affected by tariff agitation. Twenty new establishments are reported, the lowest number in recent years, nearly all of which are small carded woolen yarn and weaving mills. A canvass shows that the woolen and worsted industries are waiting until the situation clears before making many projected changes.

As in former years, Pennsylvania shows the greatest gain in new knitting mills, with New York following. An interesting feature

NEW SILK MILLS.

Connecticut	No.	1911	1910	1909	1908	1907	1906	1905
Velvets	1							
	—	1						
Massachusetts								
Vestings	1							
	—	1						
New Jersey								
Broad Silks	9							
Ribbons	3							
Throwing	2							
Artificial	1							
Miscellaneous	2							
	—	17						
New York								
Miscellaneous	3							
	—	3						
Pennsylvania								
Broad Silks	7							
Ribbon	2							
Throwing	1							
Miscellaneous	5							
	—	15						
Virginia								
Ribbons	1							
	—	1						
Total		38	34	37	32	51	36	53

in this branch is the large number of knitted neckwear mills that have started operations.

The number of new silk mills is an increase over 1910, but is slightly below the average for ten years. As usual, New Jersey and Pennsylvania lead, and there is little possibility that other states will gain to any extent on these centers.

COMPARISON OF NEW MILL CONSTRUCTION FOR LAST TEN YEARS.

	1911	1910	1909	1908	1907	1906	1905	1904	1903	1902
Cotton	32	67	80	47	64	74	33	48	81	68
Woolen	20	31	47	23	25	56	38	45	65	46
Knitting	92	113	105	94	83	103	79	111	105	82
Silk	38	34	37	33	51	36	53	49	58	45
Miscellaneous	26	29	20	25	39	34	42	37	25	21
	208	274	289	222	261	303	245	290	334	262

The detailed report of mill construction, enlargements and improvements follows. It shows that while the past year has been comparatively quiet as regards the launching of new enterprises, manufacturers have been active in building and equipping large additions and making improvements in anticipation of improved conditions.

The 48,028,180 working spinning spindles in Great Britain consumed 2,854,512 bales of American cotton for the year ending August, 1911.

New Mill Construction During 1911.

(A summary will be found in the Monthly comment of this issue.)

EXPLANATION OF ABBREVIATIONS: 12/10=Expect to start December, 1911, etc.; S=Steam; W=Water Power E=Electricity; D=Dye House.

NEW COTTON MILLS.

	Looms	Spindles
CANADA.		
Quebec, Granby. Granby Elastic Web Co., Ltd.; $50,000; P. E. Boivin, pres.; J. J. Payne treas.; C. C. Churchill, mgr.; elastic and non-elastic web braid.	..	12
CONNECTICUT.		
Plainfield. Plainfield Mills Corp.; $600,000; Harold Lawton, vice pres. and gen. mgr.; fine combed cotton and silk goods.	60,000	1,200
GEORGIA.		
LaGrange. Dunson Mills; $500,000; J. E. Dunson, pres.; T. J. Thornton, treas.; W. S. Dunson, supt. and buyer; ducks, drills, sheetings, twills, etc.; steam.	20,000	500
MASSACHUSETTS.		
Fall River. Pilgrim Mills; $1,050,000; W. C. Hawes, pres.; D. H. Hathaway, treas.; E. C. Willey, agt.; cambrics; electricity. Buildings under construction.	50,000	1,200
Fall River. Standard Fabric Co.; $150,000; John Gilbert, pres.; E. V. Livesey, treas. and buyer; yarns, braids, tapes; electricity; 1,500 braiders.	5,500	50
Lawrence. Northern Waste Co.; $2,000; J. J. Wright, Jr., pres. and mgr.; mix, clean and sell cotton waste.	..	..
New Bedford. Hill & Cutler (Boston); built plant for cleaning and sorting cotton waste.	..	..
NEW JERSEY.		
Hoboken. Duryea Mfg. Co.; $100,000; Philip L. Wooster, pres.; B. L. Duryea, treas. and buyer; solid woven cotton belt.	..	5
Rockaway. Beebe Cordage Mfg. Co.; $50,000; C. and N. A. Beebe, E. L. and E. H. Todd; hand laid clothesline. In temporary quarters. Expect to build soon.	..	..
Somerville. Redfern Lace Works; $300,000; C. E. Chapman, pres.; Irving E. Hance, treas.; Albert Redfern, vice pres., mgr. and buyer; 14 lace machines; electric.	..	..
Vineland. Davies, Thomas; cotton upholstery goods.	..	10
NEW YORK.		
New York. Vari Lace Mfg. Co., 216th St. and Bronx Ave.; laces.	..	..
NORTH CAROLINA.		
Chapel Hill. Lloyd, T. F., Mfg. Co. Completed new mill building, one story, 127 by 287 ft.; operated by 300 h. p. steam plant; cotton yarns.	10,000	..
Thomasville. Amazon Cotton Mills. Increased capital stock from $125,000 to $300,000. Built new mill, 107 by 110 ft.	6,000	..
OHIO.		
Carthage. Union Thread Co. of Cincinnati. Expect to begin operations in new mill here about the first of the year.	..	..
PENNSYLVANIA.		
Lansdale. Kinloch Rug Co.; Wm. T. Scott; Scotch carpets and rugs. (S)	..	6
Philadelphia. Bibby, Thomas J., 2627 Mutter St.; cotton and mercerized madras and gauze curtains	..	4
Philadelphia. Rockie & Ward; Wm. Ward, supt.; curtains and draperies.	..	2
Philadelphia. Henry, Jas. & Wm. G.; hosiery and weaving yarns, carded and combed peeler yarns, Egyptian yarns.	2,400	..
Philadelphia. Lings, G. S. & Co.; cotton yarn dealers; have started a commission winding plant at D and Ontario Sts.	..	..
Philadelphia. Melrose Spinning Co., Howard and Berks Sts.; Thomas Henry, Jr., mgr.; cotton carpet and upholstery yarns; 8 sets; 1,520 mule spindles.	1,520	..
Philadelphia. North Philadelphia Towel & Netting Co., 2910 N. 16th St.; H. Durfor, prop.; netting and toweling.	..	12
Philadelphia. Otto, U. W., 2013-17 E. Arizona St.; cotton and mercerized summer curtains. To be greatly enlarged if successful.	..	2
Philadelphia. Stevenson & Ward, 2766 Ruth St.; summer curtains from plain and mercerized yarns.	..	4
RHODE ISLAND.		
Pawtucket. Crown Mfg. Co.; $500,000; Lyman B. Goff, pres.; Benj. C. Chace, gen. mgr.; yarn specialties.	20,000	..
Providence. R. I. Absorbent Cotton Co.; $100,000; Wm. Bamber, James W. Lees, Henry W. Kimball.	..	..
SOUTH CAROLINA.		
Columbia. Massasoit Mfg. Co.; cotton waste. (E) Branch of Fall River, Mass.	..	..
Greenville. Dunean Mills; $1,000,000; J. Adger Smyth, Jr., pres. and treas.; Ellison A. Smyth, vice pres.; Claude D. Smyth, sec.; T. B. Wallace, supt.; fancy goods from combed yarns. Building construction to be completed about Jan. 1.	51,000	1,200
Greenville. Westervelt Mills; $1,000,000; J. J. Westervelt, pres. and treas.; India lawns and linons. (E)	50,000	1,400
Greers. Greers Mfg. Co.; built new mill, 4 stories, 110 by 130 ft.; print cloths.	15,000	400
Newberry. Oakland Cotton Mills; $400,000; W. H. Hunt, pres.; John N. Kinard, vice-pres.; E. N. Martin, sec.; sheetings. (E)	20,000	500
VERMONT.		
Brattleboro. Fort Dummer Mills; $450,000; Geo. L. Dunham, pres.; Edw. G. Chace, treas. and mgr.; Wm. Worsnop, supt.; fine lawns. (E)	35,433	650

NEW WOOLEN MILLS.

	No. Sets & Width Cds	Looms
CANADA.		
Ontario, Peterboro. Bonner-Worth Co.; $35,000; E. Worth, mgr. and buyer; I. Bonner, financial mgr.; worsted yarns, 2/18s to 2/30s. (E)	1,760 spindles.	..
Ontario. Woodstock. Woodstock Textile Co.; $75,000; D. W. Karn, pres.; E. Holden, vice-pres.; T. Drew Smith, treas.; R. J. McCuen, supt.; dress goods and upholstery fabrics. (E)	..	66
CONNECTICUT.		
Putnam. Parker-Durant Co.; $25,000; A. M. Chaffe, pres.; J. L. Brown, treas.; E. G. Gibson, mgr. and buyer; wool shoddies and extracts. Dyehouse.	9	..
MASSACHUSETTS.		
Franklin. Clark-Cutler-McDermott Co.; Wm. Cutler, pres.; Thos. S. McDermott, vice-pres.; Walter A. Clark, treas. Just completing new mill, one story, 42 by 150 ft. Will manufacture felt blankets.	..	..
Lawrence. Uswoco Mill. Leased by United States Worsted Co.; worsted dress goods and men's wear	..	600

NEWFOUNDLAND.

St. Johns. British Woolens, Ltd.; $100,000; J. J. McCabe, gen. mgr.; T. G. Dickson, supt.; blankets, sweater coats, underwear, etc.; 16 knitting machines. 2 3

NEW JERSEY.

Paterson. Niagara Shawl Co.; Michael Myers, prop., 99 River St.; worsted honey comb and fancy woven shawls. (S) 3

NEW YORK.

Amsterdam. Amsterdam Carpet Co.; $15,000 John Ambrose, pres.; Chas. Van Kleek, treas.; Jas. Riley, supt.; wool carpet yarns. ..... 3 ..

PENNSYLVANIA.

Philadelphia. Alpha Spinning Co. Leased portion of Leicester & Continental Mills, Germantown. Equipped for spinning of woolen and worsted yarns. ....

Philadelphia. Balmoral Textile Mfg. Co.; Harry Stover, prop.; Scotch rugs. 5

Philadelphia. Crescent Spinning Mills; $20,000; John R. Dale, pres.; Henry W. Grant, treas. and supt.; woolen weaving and knitting yarns; 2,000 mule spindles. ..... 3 ..

Philadelphia. Ferguson Carpet Co.; $50,000; Norman Cramp, pres.; Lincoln Ferguson, treas.; B. Knifton, supt.; velvet carpets. 30

Philadelphia. Philadelphia Pile Fabric Mills; $100,000. Richard J. Steiner, Joseph, Benjamin and Isaac Wasserman and John Zimmerman interested. Mill under construction to be equipped for making pile fabrics. ....

Philadelphia. Shepperd Mfg. Co. (Ripka Mills); G. P. Shepperd, pres.; Wm. J. Ennis, mgr.; dress goods. 60

Philadelphia. Sprague Worsted Mills, Wister Station; Albert B. Sprague, supt.; men's worsteds, cotton worsteds and dress goods. (E) 24

Philadelphia. Sylvan Worsted Co.; $25,000; 10th and Diamond Sts.; woolen and worsted novelties. 6

Wallingford. Duray Worsted Mills; offices at 33 Greene St., New York; men's wear and dress goods. 24

Wilkesbarre. Diamond City Rug & Carpet Co.; $5,000; E. F. Kill, treas. and buyer; rugs from old carpets. 10

WASHINGTON.

Ellensburg. Washington Woolen Mills; $60,000; J. H. Smithson, pres.; O. W. Sinclair, vice pres.; C. W. Johnson, treas.; J. F. McAfee, sec. and gen. mgr.; blankets. Building under construction. 3 15

Spokane Gunderson, Otto.; Sixth and Sherman Sts.; woolen yarns. (To install looms.) ..... 1 ..

NEW KNITTING MILLS.

No. Knt. Machines

ALABAMA.

Anniston. United Hosiery Mills.. $100,000 (authorized); S. C. Meade, pres. and supt.; J. W. Hellings, treas.; hosiery. 65

CANADA.

British Columbia, Vancouver. Lion Knitting Co., Ltd., 52 Pender St : Joseph Lansing; sweaters and sweater coats. ....

Ontario, Hamilton. Canadian Knitting Co., Ltd.; $300,000; John M. Harris, pres.; T. J. Stewart, vice-pres.; Robt. B. Harris, sec.; Robt. R. Simpson, treas.; W. H. Magill, mgr.; balbriggan underwear. Building under construction Nov., 1911. .... ..

Ontario, London. Holeproof Hosiery Co. of Canada, Ltd.; $50,000; Carl Freschl, pres.: E. S. Little, treas.: L. Heilbronner, supt.; electricity; dye. Branch of Milwaukee. 30

Ontario, London. Thomson Knitting Co.; ladies' and misses' seamless cotton hosiery. ....

Ontario, Woodstock. Ken Knit Co.; $100,000; K. Harvey, supt.; sweater coats, neckties and scarfs; 10 sewing machines; electricity. To begin manufacturing Jan. 1. 15

Quebec, Beauce Junction. National Knitting Co., Ltd.; Joseph Asselin, pres.; hosiery, sweaters, etc. ..

DELAWARE.

Newcastle. E. E. Gambril; knitted wristing for cloth gloves; dyeing equipment. 30

Wilmington. Crown Knitting Mills; Geo. A. Robinson, pres., supt. and buyer; L. K. Robinson, treas.; women's hosiery; electric. 32

GEORGIA.

Marietta. Marietta Knitting Co. Built new mill, 40,000 sq. ft., to take place of former structure. Added 12 knitting machines on fine gauge goods. ..

ILLINOIS.

Chicago. Eagle Hosiery Mills; H. M. Kahn, pres. and mgr.; H. Gutman, treas.; Ernest Petersen, sec.; lisle, mercerized and silk hosiery. 10

Chicago. Earnshaw Knitting Co.; $50,000; G. F. Earnshaw, pres., treas. and buyer; women's and children's underwear. 10

Chicago. Gibraltar Knitting Mills; Nathan Siegal; electric; sweater coats, fancy knit goods, etc. (E) 15

Collinsville. Chester Knitting Mills. New mill under construction. Reported will be occupied by Chester Knitting Mills, Chester, Ill. ....

INDIANA.

Goshen. Rock Run Mills; $75,000; W. L. Stephenson, pres.; D. K. Stephenson, treas. and supt., and W. L. Stonex; fine gauge men's underwear; besides knitting machinery, to have 2 sets wool cards and 1,200 spindles. ....

KANSAS.

Topeka. Textile Mfg. Co. Branch of Chicago. To have output of 100 dozen union suits daily when completed. ....

MARYLAND.

Baltimore. Mt. Vernon Knitting Co.; $20,000; Chas. V. Stinchecum, pres., mgr. and buyer; Geo. W. Fort, sec. and treas.; men's half hose; electric. .. 5

Hagerstown. Zook, Geo. A.; ladies' knit underwear from combed yarns; 25 hands employed. .... ..

Thurmont. Union Mfg. Co.; hosiery; branch of Frederick; electricity. 50

MASSACHUSETTS.

Brookline. Jersey Cloth Mills; E. L. Barrows, mgr.; R. J. Logan, treas.; jersey cloth, rubber linings and similar goods; electricity. 10

East Douglas. Tallyho Knitting Co.; $40,000; A. F. Jones, pres.; J. W. Wixtead, vice-pres.; E. A. Wye, treas., mgr. and buyer; sweater coats. .... ..

Haverhill. Buckley, J. M.; men's medium seamless and ladies' mercerized hosiery. 5

Shelburne Falls. Ashoyton Knitting Co.; H. R. Ashworth, supt. and buyer; gloves, mufflers, caps, toques, novelties; electric. 10

Taunton. Lockstitch Hosiery Co.; C. H. Lawrence, agt. and buyer; S. C. Maloy, supt.; Sea Island men's half hose; electric. 6

MICHIGAN.

Middleville. Blake Knitting Co.; Glenn E. Blake, pres.; C. A. Robertson, treas.; men's hose. 5

Grand Rapids. Grand Rapids Hosiery Co.; $100,000; E. A. Clements, pres.; John Snitseler, treas.; M. T. Murphy, supt.; men's and women's seamless hosiery. 25

NEW JERSEY.

Bloomfield. Blanchard & Price (N. Y., 142 Fifth Ave.); silk knitted neckties. ....

Wharton. Wharton Textile Co.; J. Allen Crews, supt.; mercerized and silk seamless hosiery. ....

NEW YORK.

Brooklyn. Knit Goods Mfg. Co., 5 McKibben St.; $20,000; I. J. Natelson, pres.; W. Natelson, treas.; jerseys and fancy knit goods. 10

Gloversville. Holmes, Geo. C., 16 Lincoln St.; silk veils, scarfs, gloves and lace mitts. 8

New York. Bruce Pleating Co., 200 W. 23d St. Installed equipment for manufacture of silk knitted ties. ....

New York. Krosnit Mfg. Co., 179 E. 116th St.; A. C. Kross, mgr.; seamless cotton and woolen hosiery. ....

New York. Rubin Bros., 149 Wooster St.; manufacturers of braids and trimmings; put in 25 knitting machines for making knitted neckties. 25

New York. Schnitzer & Co., 113 University Pl.; millinery and dress trimmings; 6 knitting looms. ..
New York. Weiss & Gottfried, 200 W. 23d St.; knitted silk neckties. ..
Oswego. Shufelt, Jas. A. To build mill for manufacture of men's union suits. Expects to start business in the spring. ..
Rome. Rome Knitting Co.; $30,000; J. Orley Stranahan, pres.; Albert Krebbs, treas.; T. S. Griffin, agt., supt. and buyer; children's, misses' and boys' ribbed underwear and union suits; 20 sewing machines. 12
Stittville. Adirondack Knitting Co.; $50,000; Chas. S. Symonds, pres.; Wm. J. McQuade, sec.; Geo. A. Frisbee, treas.; Wm. A. Ainsworth, supt. and buyer; fine balbriggan and union suit specialties. 20
Walton. White Rock Knitting Mills Co.; $15,000; Herbert Shaw, Paul and C. G. Nichols, James Mann and Percy Strong. ..

NORTH CAROLINA.

Burlington. Midway Improvement Co.; $25,000; John M. Coot, pres. and treas.; C. Boland, supt.; men's and women's hosiery. 45
Robersonville. Robersonville Hosiery & Mfg. Co.; $20,000. Building completed, but no machinery installed. ..
Washington. Tar River Hosiery Mill; J. T. Lewis, prop.; D. B. Simpson, supt. Occupy former quarters of Thelma Knitting Mill. 30

OHIO.

Cleveland. Eibel, Richard, 2063 W. 52d St.; sweater coats and cardigans. 3
Cleveland. Forest City Knitting Co.; C. Hendrich, mgr.; sweater coats, fancy knit goods, hosiery... 15

PENNSYLVANIA.

Allentown. Royal Knitting Mills; Rittersville, Knecht & Reed, props.; misses' union suits. 6
Auburn. Walborn Knitting Mills; Claude D. & J. A. Walborn; women's ribbed underwear. 12
Bangor. Bangor Silk Knitting Co.; $5,000; Henry Berendsen, pres.; ladies', men's and misses' silk hosiery. 11
Carbondale. Carbondale Knitting Mills; $25,000; Max Frieder, pres.; E. M. Pack, treas.; knit garments and specialties. Plant being equipped. ..
Hamburg. Standard Knitting Mill; Jacob R. Kessler, prop.; Walter Kessler, supt.; women's cotton ribbed underwear; 10 sewing machines. (S) 7
Manheim. Hygrade Hosiery Mfg. Co.; Edw. P. Jones, supt. and buyer; men's and women's cotton and silk hosiery. Taken over plant of Mr. Jones at Bristol, Tenn. 70
Mosiem. Ammon, Edward R.; ladies' hosiery; 3 sewing machines; 4 loopers. (Formerly in business at Reading.) 20
Philadelphia. Bellows Knitting Co. Leased space at 134-136 Market St., and installed machinery for making knitted neckties. ..
Philadelphia. Belmont Knitting Mills, Fetters & Partrige 13th St. and Columbia Ave.; high grade knitted neckties of silk; electricity. ..
Philadelphia. Clay, H. W., 2240 Orkney St.; women's seamless cotton hosiery. ..
Philadelphia. Clinton Mfg. Co., 1645 N. 10th St.; manufacture and finish hosiery; 8 sewing machines; 2 loopers. 26
Philadelphia. Cohn & Summerfield; aviation caps and other fancy hand knit goods. ..
Philadelphia. Eastern Knitting Mills (Casten & Bogen), 110 Arch St.; sweater coats; electricity... 4
Philadelphia. Edwards & Troth Co., manufacturers of silk neckties, installed a number of machines for making knitted ties. ..
Philadelphia. Federal Knitting Co., Ontario and Lawrence Sts.; high grade knitted silk neckties. ..
Philadelphia. Grand Hosiery Co., 2046 E. Sergeant St.; J. Price, supt.; ladies' seamless hosiery. 7
Philadelphia. Haynes, Henry T., 2856 E. Pacific St.; women's seamless cotton hosiery; 1 sewing machine; 1 looper. To be increased. 3
Philadelphia. International Knitting Mills, 253 S. Fifth St.; knitted silk neckties. ..
Philadelphia. Keystone Glove Co., 123 S. Third St.; temporary quarters; knitted gloves. ..
Philadelphia. Lemuth, Henry, Co.; $100,000; Henry Lemuth, Jr., pres.; Geo. Lemuth, sec. and treas.; Oscar Nebel, supt.; full fashion silk hosiery; 24 full fashion frames. (E) ..
Philadelphia. Levy & Co., 931-33 Market St.; knitted silk neckties. 24
Philadelphia. McCutcheon, T. P. & Bro., Inc., 249 Cullom St., Germantown; silk knitted neckwear. 12
Philadelphia. Matrik Hosiery Co., 5120 Wakefield St., Germantown; John B. Barker, prop.; women's seamless cotton and mercerized hosiery; 5 sewing machines. 24
Philadelphia. Metropolitan Knitting Mills, 2829 Kensington Ave.; Isadore Rosenstein, prop.; sweater coats. 7
Philadelphia. Modern Knitting Mills, 310 Carpenter St.; knitted silk neckties. ..
Philadelphia. Pioneer Knitting Mills, 134-136 Market St.; $10,000; Louis I. Bellows, pres. and treas.; silk neckties; 4 sewing machines. 40
Philadelphia. Red Star Knitting Co., 125 N. 3d St.; sweater coats and nevelties; 7 sewing machines; electricity. 6
Philadelphia. Reis & Smith Mfg. Co., 141 N. 3d St.; sweaters, bathing suits, etc.; 36 sewing machines. 7
Philadelphia. Richter, Harry, Moyamensing Ave.; sweater coats. 4
Philadelphia. Richter, Louis, 617 S. Fourth St.; women's and children's sweater coats. 5
Philadelphia. Rose & Lehrfeld, 1024 Filbert St.; knitted silk neckties. ..
Philadelphia. Sheple & Sabul, 534-36 N. Third St.; knitted silk neckties. 15
Philadelphia. S. & C. Knitting Co., 5619 Tulip St.; sweater coats and underwear. 8
Philadelphia. Victor Hosiery Mills, 2252 N. 20th St.; knitted neckties. ..
Reading. Fehr Knitting Co.; $10,000; L. W. Fehr, pres.; Ezra J. Moyer, treas.; W. C. Bitting, mgr.; women's underwear. (S) ..
Reading. Marathon Hosiery Co.; A. J. W. Baker, treas.; ladies' mercerized and lisle seamless hosiery; 8 loopers; 7 sewing machines; electricity... 50
Reading. Perfect Shape Textile Co.; $100,000; women's full fashioned hosiery, cotton, silk and mercerized. ..
Reading. Premier Underwear Co.; $10,000; J. L. Coxe, pres.; H. A. Coxe, treas.; David Kauffman, supt.; ladies' mercerized and plain Swiss ribbed vests. 3
Shenandoah. Miller Knitting Mills; J. J. Miller, prop.; women's cotton ribbed underwear; 8 sewing machines; electricity. 6

RHODE ISLAND.

Providence. Narragansett Hosiery Co., 287 Thurbers Ave.; 220-needle hosiery for men. ..
Warren. Ainsworth & Sons, 31 Market St.; men's hosiery. 12
Warren. Standard Specialty Mills; D. J. Burgess, treas.; E. B. Estes, pres.; sanitary napkins; bleach and finish. 40

SOUTH CAROLINA.

Westminster. Westminster Knitting Mills; $40,000; J. S. Carter, pres.; L. H. Cox, supt.; men's and women's coarse hosiery; 10 ribbers; 15 loopers; 2 sewing machines. 60

UTAH.

Ogden. Scowcroft, John & Sons Co.; H. F. Hoffman, supt.; sweaters. 25

VIRGINIA.

Suffolk. Carr Knitting Mills; $50,000; G. L. Bell, pres.; P. G. Everett, treas.; J. O. Carr, mgr.; seamless hosiery. (E) 30

WISCONSIN.

Milwaukee. Koenig Knitting Co., 390 Hanover St.; $5,000; Charles H. Koenig, pres. and buyer; Eugene C. Koenig, treas.; hosiery. (E) 6
Milwaukee. Orthopedic Appliance Co.; Adolf Visel and S. W. Leeming; elastic stockings; 5 sewing machines. 2
Stoughton. National Knitting Co.; H. Kroetz, mgr.; hosiery, gloves, etc. Branch of Milwaukee. ..

NEW SILK MILLS.

Looms

CONNECTICUT.

Willimantic. Rossie Velvet Co. (Mystic, Conn). Built branch mill with capacity of 140 looms. 50

MASSACHUSETTS.

Hyde Park. Stohn, C. Built new mill, two stories, 245 by 65 ft., to combine plants at Jamaica Plain and Jersey City. ..

NEW JERSEY.

Camden. American Artificial Silk Co.; $1,000,000; succeeds Art Fibre Co., Norristown, Pa.; John Bister, pres.; Henry Bernstein, vice-pres.; V. F. Wilcox, treas.; Carl Wolgerer, mgr. Plant under construction. (Phila. office, 1015 Race St.) ..

Paterson. American Alliance Silk Throwing Co.; $125,000; J. B. Whitney, pres., treas. and buyer; Wm. E. Eaton, supt.; 4,000 spindles. ..

Paterson. Atlantic Silk Co., 22 Paterson St.; broad silks. 10

Paterson. Brown Bros.; Hamilton Mills; Harry Brown, buyer; broad silks. 18

Paterson. Excello Silk Co., 81 Cross St.; $20,000; Daniel Patrick, pres. and supt.; Harry T. Johnson, treas. and buyer; silk ribbons. 7

Paterson. Fashion Silk Mfg. Co., 164 Ward St.; $50,000; John Maher, agt.; silk goods. ..

Paterson. Heller-Hardt Hat Band Co.; $100,000; Henry W. Heller, pres.; Emil Hardt, treas., agt. and buyer; hat bands. 20

Paterson. Katz, Barnet, Essex Mill, Mill St.; broad silks. 8

Paterson. Lippman & Abrash, Lyons St.; broad silks. 16

Paterson. Littman, J., Essex Mill; broad silks. 26

Paterson. Manufacturers' Waste Products Co.; $50,000; Frank A. Post, pres.; Harry Ferenbach, treas.; John Grimshaw, agt.; silk waste products. ..

Paterson. Pelican Silk Co.; $10,000; Jos. Wolf, treas. and supt.; veilings. 20

Paterson. Platt Bros., 93 River St.; broad silks. 10

Paterson. Ratsch Throwing Co.; $10,000; S. J. and E. B. Ratsch and J. A. Delaney; Messrs. Ratsch formerly of Ratsch & Dime; commission silk throwing. ..

Paterson. Regroy Ribbon Co.; $100,000; Emil Fischer, Robt. F. Buckley, Jonathan Pompret, Jr. ..

Paterson. Salzberg, M. & Son, 93 River St.; broad silks. 20

West New York. Catoir Silk Co. (New York); linings and neckwear, silks. New mill built as branch of New York plant. ..

NEW YORK.

Granville. Clark Textile Co. Erecting branch plant containing 150 sewing machines for finishing silk gloves. (E) ..

Schenectady. Mohawk Silk Fabric Co.; branch of Fultonville; 125-150 sewing machines on silk gloves and underwear ..

Schuylerville. Clark Textile Co.; branch of Saratoga Springs; 60 sewing machines operated on silk gloves. ..

PENNSYLVANIA.

Allentown. Kemmerer, L. H. & Co.; L. H. Kemmerer, supt. and buyer; silk ribbons. (E) 20

Catasauqua. Catasauqua Silk Co.; $15,000; Jas. J. Seigfried, pres.; Wilson J. Smith, treas.; E. J. Smith, agt.; F. J. Ichleicher, supt.; broad silks; electricity. New building about completed. ..

Egypt. Feldhege Silk Mfg. Co.; E. T. Zellner and M. Feldhege. Building one-story brick mill, 60 by 72 ft., to be ready for production Feb. 15, 1912. 120

Freeland. Washington Silk Co.; $35,000; W. E. Martin, pres.; B. F. Davis, treas.; Gustave H. Repers, gen. mgr.; silk goods; electricity. 50

Fullerton. McBride, John; broad silk dress goods. 24

Hudson. Century Throwing Co.; Peter R. Rowson, pres.; Alex. McLane, treas.; silk throwing on commission; 7,300 spindles. New mill constructed and plant moved from Paterson. ..

Northampton. Dery, D. G. Building new mill to contain 250 broad silk looms. 250

Philadelphia. Felton & Stott, 2024 N. 10th St.; silk, cotton and mercerized fabrics; 30 braiders; electric. ..

Philadelphia. Enochs-Hermes Braid Co., Inc., Front and Oxford Sts.; braids, millinery and dress trimmings; 78 braiders; 2 knitting looms. ..

Philadelphia. Joynes-Campbell Co., 123-125 N. 4th St.; reported capitalized at $500,000; installed machinery for manufacture of silk braids and tassels. ..

Philadelphia. Novelty Embroidery Co., 3241 Ridge Ave.; embroideries. ..

Philadelphia. Samler, S. & Co., 1514 N. Front St.; Wm. Reifferscheidt, supt.; millinery braids and dress trimmings; 65 braiders. ..

Williamsport. Morrison, Thos. & Sons. Built new mill, 56 by 125 ft., with space for 125 looms; 60 looms installed; electricity. 60

York. Levy, E. & H. (New York). Established branch ribbon plant. Enlargement contemplated. ..

York. Souter Silk Mfg. Co.; John F. Kissinger, pres.; J. H. Manifold, vice pres.; Herman Shetter, sec. and treas.; Sydney H. Souter, mgr. Occupying plant of York Cotton Co. To be increased to 150 looms. 25

VIRGINIA.

Richmond. Virginia Silk Co.; $250,000; Williamson Talley, pres.; G. G. Valentine, vice pres.; W. S. Wortham, sec.-treas.; W. M. de Pars, gen. mgr.; silk ribbons. ..

MISCELLANEOUS NEW MILLS.

CANADA.

Quebec, Montreal. Cotton Thread, Ltd., 211 Delormier Ave.; spooling, skein winding, dressing, dyeing and bleaching of spool and tube threads.

GEORGIA.

Moultrie. Riverside Mfg. Co.; $25,000; W. J. Vereen, pres. and treas.; J. O. Macon, vice-pres. and mgr.; mattresses, comforts and pillows.

MASSACHUSETTS.

Canton. Springdale Fibre Co.; John H. Meyer, New York; ramie yarns.

North Dighton. Harodite Finishing Co.; $25,000; John J. O'Hare, pres., supt. and buyer; David Steiner, treas. Leased property formerly occupied by Chadwick Print Works.

NEW JERSEY.

Newton. Sussex Print Works; $150,000; Herbert Bentley, pres.; Wm. Hutt, treas. and agt.; dyeing, printing and finishing of silk and mercerized goods.

Paterson. Deeks Silk Printing Co., Congdon Mill; $100,000; H. C. J. Deeks, pres.; printers of warps and ribbons; redying and finishing.

Paterson. Schetty Silk Dyeing & Finishing Co.; $75,000; Theodore Schetty, pres.; Frederick M. Sindle, treas.; skein and piece dyeing. Will occupy premises at 188-198 Putnam St. for the present.

NEW YORK.

Hewlett (L. I.). Hewlett Embroidery Works; $50,000; Albert Brennwald, pres.; Henry Ruppert, treas.; Swiss embroideries and laces; electric power; employ 40.

OHIO.

Bellefontaine. Bellefontaine Mattress & Comfort Co.; $25,000. To establish new plant and take over business of Goodfellow Comfort Co. of South Vienna.

PENNSYLVANIA.

Bethlehem. Bethlehem Dye Works; A. B. Harbison, treas. and buyer; dye fast black and colors on hosiery; also bleaching and finishing. (S & E)

Philadelphia. Caledonia Dye Works, 1929 E. Westmoreland St.; $50,000; Wm. MacNeill, pres.; dye long and short chain cotton warps, cotton, woolen and worsted skein yarn.

Philadelphia. Ebony Dye Works, Front St. and Lehigh Ave. (former quarters of Hall Hosiery Co.); dyeing and finishing of silk and cotton hosiery.

Philadelphia. Fern Rock Bleachery; $10,000; Joseph Hayden, pres.; John Dougherty, treas.; Geo. Schweigart, sec.; bleachers and dyers of cotton fabrics and knit goods.

Philadelphia. Germantown Lace Mills, 4947 Wakefield St., Germantown; finish laces.

Prairie du Chien. Paris & Merrill Co.; cotton batting;

Philadelphia. MacNeil Bros., 1929 E. Westmoreland St.; dye warps, etc.

Philadelphia. Textile & Hosiery Printing Co., 2042 E. Clementine St.; John Bray, mgr.; printers and extractors of hosiery and fabrics.

RHODE ISLAND.

Ashaway. Ashaway Dyeing & Finishing Co.; Jos. D. Price; woolen and worsted dyeing and finishing.

Bradford. Bradford Dyeing Assn.; $1,000,000; David H. Thornton, pres.; Rufus W. Sprague, Jr. (N. Y.), vice pres. and treas. Erecting large dyeing, bleaching and finishing plant. Purchased property of Niantic Dyeing Co.

Phenix. Pawtuxet Valley Dyeing Co.; James McDowell, supt.; dye, wind and spool cotton, woolen and worsted yarn and dye piece goods.

Providence. Franklin Process Co.; $300,000; John C. Hebden, vice pres. and gen. mgr.; E. S. Graves, asst. mgr.; Lewis Milner, treas.; dyeing of yarns by Franklin process.

Providence. Standard Textile Co.; $100,000; John T. McKee, J. Frank Sunderland and John E. Bolan. To dye and manufacture silk, cotton and woolen goods.
Woonsocket. Park Spring Dyeing & Bleaching Co.; $10,000; Frank J. Prue, pres.; C. E. Foster, supt.

SOUTH CAROLINA.

Spartanburg. Union Cotton Bagging Corp.; jute and cotton batting and fibers, patent bagging and bale ties. Branch of Norfolk, Va.

WISCONSIN.

Fond du Lac. Wisconsin Grass Rug & Carpet Co.; $200,000; C. L. Hastings, pres. and treas.; R. H. Colman, sec.; E. W. Goodrick, supt.; grass rugs.
Green Bay. Willow Grass Rug Co.; $100,000; A. B. Fontaine, pres.; C. F. Van Dyke, treas.; C. Kieren, supt.; grass rugs. (E)
Prairie du Chien. Paris & Merrill Co.; cotton batting; 3 garnetts.

Projected Industries.

Under this head are enumerated such projects as are now in course of construction, or which in all probability soon will be, but are not sufficiently far advanced to be properly identified in the list of new mills.

COTTON.

GEORGIA.

Monticello. Castle Cotton Mills, Ltd.; $1,250,000; Wm. T. Lang, pres.; converters goods; electric; 50,000 spindles; 1,200 looms.

MISSOURI.

St. Louis. Reported company organized with $50,000 capital to establish plant for manufacturing fish nets.

NEW YORK.

Jamestown. A. C. Weborg and A. M. Bloomquist. Experimenting with two looms on Turkish towels. If successful, will build in the spring.

NORTH CAROLINA.

Barclaysville. Harnett Mfg. Co.; $25,000; A. B. Currin, W. J. Alston and Sandy Adams. To establish a plant for manufacture of cotton yarns and cloth.
Mt. Holly. Energetic Mfg. Co.; $100,000; Geo. A. Howell, promoter. Plans prepared for 5,000-spindle mill, electrically driven. Construction work not begun.
Newell. W. B. Newell at head of a project for the formation of a cotton mill company.
River Falls. River Falls Cotton Mills Co.; J. W. Menefee, pres. and treas. Plans prepared for 10,000-spindle, 240-loom mill to make convertible goods.
Rocky Mount. A. Novey and others reported in establishment of cotton comfort factory.
Spray. Fine Arts Gingham Mfg. Co.; ginghams; steam and electric; 10,000 spindles; 400 looms. Mill to be located at Meadow Summit.

OKLAHOMA.

Oklahoma City. I. M. Putnam reported to have interested eastern capital in organization of a cotton manufacturing plant.
Shawnee. Shawnee Cotton Mills; $250,000; 20,000 spindles; 500 looms. Shawnee Development Co. interested.

SOUTH CAROLINA.

Cheraw. Chesterfield Cotton Mill; $250,000; 10,000 spindles. Z. T. McKinney and D. L. Tillman interested.
Prosperity. Geo. Y. Hunter heads movement for organization of cotton mill.

TEXAS.

Dallas. Geo. Garrett, Detroit, Mich., reported to establish cotton mill in eastern Texas.
El Paso. American Exploration & Holding Co. to organize stock company to erect cotton mill, bleachery, printing plant, etc.
Riverside. E. B. Webster representing parties who propose to establish $200,000 cotton mill.
San Antonio. Olympia Cotton Mills; $250,000; W. K. Durham, pres.; C. S. Durham, treas.; M. W. Durham, agt. and supt.; cotton duck. Plans prepared.
Waco. Waco Cotton Mills Co.; 5,000-spindle twine mill. Stock being subscribed.

WOOLEN.

ARIZONA.

Tempe. Tempe Woolen Mills Co.. W. J. Kingsbury, A. J. Peters and C G. Jones interested.

OREGON.

Bend. F. J. Bailey and Bend Commercial Club signed agreement for six-set mill of 50 looms to manufacture blankets.
Portland. Pres. McMonies of the Manufacturers' Association states that a company is being organized to establish a woolen mill here and efforts are being made to raise $150,000 capital.

PENNSYLVANIA.

Pittsburg. Valley Yarn & Woolen Co. purchased factory site. May build.

TEXAS.

San Angelo. Probable that a woolen mill or wool scouring plant will be established here.

VIRGINIA.

Laurel Mills. Expected that plant of the Rappahannock Woolen Mills, totally destroyed by fire, will be rebuilt.

KNIT.

GEORGIA.

Vila Rica. Fuller Knitting Mill; J. F. Fuller, prop.; half hose.

ILLINOIS.

Lincoln. Capital being raised to establish $25,000 knitting mill. Likely to be carried through.

MASSACHUSETTS.

Lynn. Bay State Hosiery Co.; $10,000; Lucius R. Means, pres.; Eli G. Greene, treas., and Grace P. Greene. Not yet operating.

NEW JERSEY.

Belvidere. A knitting mill operating in Philadelphia reported to locate here.

NEW YORK.

Brooklyn. New York Knitting Mills Co.; $25,000; Henry Goldman, John H. Meyer and B. A. Lehman; seamless knit goods.
New York. Okun Knitted Neckwear Co.; $2,000; Charles, Bernard and Herman L. Okun; knit neckwear.

PENNSYLVANIA.

Pottstown. Brendlinger, J. H. & Son. Interested in company to be known as the Pottstown Garment Co. to make women's ribbed vests.
Pottstown. W. S. Graver and Herman Fegley to operate knitting mill here.
Shoemakersville. Miller, R. T. & Co. (R. P. and Geo. P. Miller); ribbed vests; 7 machines.
Thomasville. H. J. Rahe, G. W. Lauer, E. H. Neiman and L. M. Lauer interested in organization of knitting mill.
West Chester. West Chester Toque Works; may build small mill in spring.

TENNESSEE.

Nashville. Ideal Mfg. Co.; Jas. H. McPhail and J. G. Claiborne; make a physical culture brace; may make women's underwear.

VIRGINIA.

Elba. R. B. Powell promoting $40,000 knitting mill proposition.

SILK.

CANADA.

Quebec, Montreal. Canada Silk Co. Reported being formed with capital of $100,000.

MISCELLANEOUS.

CANADA.

Quebec, St. Timothee. Canadian Colored Prints Co.; R. G. Tolmie, mgr.; bleach and print cotton goods.

MICHIGAN.

East Tawas. Herman A. Miller and I. J. Coffin of Detroit plan to establish a flax mill here.

MISSOURI.

St. Louis. Continental Converting Co.; $100,000; Walter H. Carter, O. M. Hill, T. A. Meyers; cotton goods, bleaching and finishing.

St. Louis. Lowell Bleachery, of Lowell, Mass., to establish branch here.

PENNSYLVANIA.

Collegeville. C. A. Greiner, with assistance of local capital, proposes to establish artificial silk plant here.

Easton. John Crossley & Sons, Ltd., English carpet and rug manufacturers, purchased land and will locate plant here.

SOUTH CAROLINA.

Greenville. Clayton Linen Mills; $300,000; Raven I. McDavid, pres.; towels, etc.; about 5,000 spindles; electricity; site not selected.

Important Changes.

COTTON.

ALABAMA.

Oxford. Southern Mills Corp. Succeeded Planters' Mfg. Co., and doubled capacity of plant.

Selma. Helen Cotton Mills Co., Inc.; $200,000; W. D. McNeill, pres.; Hugh Mallory, treas.; J. E. Gaddy, supt. Succeeded Cawthon Cotton Mill and installed new weaving equipment.

Siluria. Buck Creek Cotton Mills. Succeeded Siluria Cotton Mill and increased equipment to 20,000 spindles and 400 looms.

CONNECTICUT.

East Killingly. International Cotton Mfg. Co.; $70,000; Walter A. Guile, treas. Taken over old Bishop Mill and equipped to make cotton wadding.

Hartford. Hartford Thread Co. Business purchased by Bay State Thread Works and plant removed to Springfield, Mass.

New Hartford. Draycott Mills Co.; $1,000,000. Taken over plant of American Ramie Mfg. Co.; Henry H. Perry, pres.; Walter D. Loring, treas.; Jas. E. Carroll, clerk; Francis S. Bickford and Wm. H. Best; fabrics, including bobbinette.

Willimantic. Quidnick-Windham Mfg. Co.; $1,000,000; Jeffrey Davis, pres.; J. H. Hambly, treas. Merger of Windham Mfg. Co., Willimantic, and Quidnick Mfg. Co., Coventry, R. I.

GEORGIA.

Atlanta. Martel Mfg. Co.; $200,000; Louis W. Smith, Wm. W. Farrish, Isaac R. Stewart. This company is to operate the Elizabeth Cotton Mills, purchased at auction sale.

Fort Valley. Fort Valley Cotton Mills; $90,000. Operating plant of Fort Valley Yarn & Hosiery Mill; 8s to 18s hosiery yarns.

Hartwell. Hartwell Mills; $90,000; J. M. Geer, pres.; W. H. Geer, treas.; C. W. Rice, supt. and buyer. Took over the Witham Cotton Mills.

Lawrenceville. Lawrenceville Mfg. Co. Taken over and being operated by the Gate City Cotton Mills of Atlanta.

MASSACHUSETTS.

Athol. J. L. Rome & Sons purchased mill formerly owner by W. H. Kauffman. To manufacture batts.

Conway. Guilford & Cook cotton yarn mills purchased by Bullard Thread Co.

Fall River. Fall River Webbing Mills; $40,000; John H. Estes, pres.; J. T. Lincoln, vice-pres.; Alex. Simmons, treas.; Matthew Hanscom, supt.; tapes, braids, webbing, etc. Has taken over plant formerly occupied by Hanscom Bros.

Marlboro. Natl. Wadding Co. Formerly at Charlton City. Have purchased building of the Marlboro Factory Corp.

Taunton. Old Colony Mfg. Corp.; $200,000; H. M. Lovering, pres. and treas.; H. H. Culver, supt. Reorganization of Elizabeth Poole Mills.

Worcester. Standard Woven Fabric Co.; authorized capital $400,000. Takes over Multiple Woven Hose & Rubber Co. H. F. Barrus, pres. and treas.

MISSISSIPPI.

Batesville. Panola Cordage Co.; $20,000; A. S. Kyle, C. B. Vance J. C. Jarrett, W. M. Keith. Succeeded Batesville Yarn & Cordage Co.

Meridian. Meridian Cotton Mills. Being reorganized; operations to be resumed.

MISSOURI.

Kansas City. Kansas City Cotton Mills Co.; reorganized; $800,000; repairs and alterations made.

NEW HAMPSHIRE.

Claremont. Monadnock Mills; capital increased to $500,000. Purchased equipment of Union Mfg. Co. of Peterboro.

NEW JERSEY.

Somerville. Cott-A-Lapp Co. Plant moved here from New Haven, Conn. Absorbed Tex-Ta-Dor-Na Mfg. Co. of Columbus, O.

NEW YORK.

Lestershire. Lestershire Towel Mills; $8,000; John J. McDavitt, pres.; R. M. Davidson, treas.; M. K. Sheridan, sec. Succeeded Corliss Towel Mills. To increase.

NORTH CAROLINA.

Asheville. French Broad Mfg. Co.; J. R. Stewart, pres. and treas.; W. H. Bradley, mgr. Succeeded Asheville Quilt Mills.

Bessemer City. Atlas Mfg. Co.; $100,000; A. A. McLean, pres.; C. J. Huss, sec. and treas. Succeeded Akron Mfg. Co.

Bessemer City. Sanders Spinning Mill; J. W. Sanders, pres. and treas.; J. W. M. Jenkins, supt. Taken over Smith Cotton Mill Co.

Brevard. Brevard Cotton Mills; $100,000; W. C. Cleveland, J. Hudson Williams and Welch Galloway. Purchased and will operate plant of Transylvania Cotton Mill Co.

Randleman. Deep River Mills; J. C. Watkins, pres. Company formed to take over the Naomi Falls Mfg. Co. and the Randleman Mfg. Co. Important improvements and installations to be made.

PENNSYLVANIA.

Philadelphia. Quaker Lace Co.; $2,500,000. A consolidation of the Lehigh Mfg. Co. and the business of Jos. H. Bromley, lace curtains.

SOUTH CAROLINA.

Fork Shoals. Katrine Mfg. Co.; $100,000; B. E. Geer, pres. and treas.; J. W. Roberts, supt.; 20s single and ply warps and cotton yarns. Taken over plant of Fork Shoals Cotton Mill.

Greenville. Parker Cotton Mills Co.; $10,0000,000; Lewis W. Parker, pres.; Thos. F. Parker, vice-pres.; M. L. Marchant, vice-pres.; Alex. Macbeth, treas.; M. M. Trotter, Jr., sec. and asst. treas. Holding company controlling Apalache Mills, Capital City Mills, Granby Cotton Mills, Olympia Cotton Mills, Richland Cotton Mills, Beaver Dam Mills, Monaghan Mills, Greers Mfg. Co. and others.

Greenville. Woodside Cotton Mills Co.; $3,000,000; John T. Woodside, pres.; J. D. Woodside, treas.; E. F. Woodside, sec. Merger of Woodside Cotton Mills, Greenville; Simpsonville Cotton Mills, Simpsonville, and Fountain Inn Mfg. Co., Fountain Inn.

TENNESSEE.

Knoxville. Knoxville Spinning Co.; $50,000; L. D. Tyson, pres. Taken over spinning department of Knoxville Woolen Mills, 1/18 to 1/20 hosiery yarns.

TEXAS.

Brenham. Lone Star Cotton Mills; D. C. Giddings, pres.; D. C. Williams, sec.; H. F. Holmes, mgr. To take over and operate Brenham Cotton Mills.

Galveston. Phoenix Waste Mfg. Co.; $40,000; Leonard Joseph, pres. and treas.; H. G. Jones, supt. Taken over Galveston Waste Mills.

WOOLEN.

CANADA.

Nova Scotia, Amherst. Hewson's, Ltd. Combination of Hewson Woolen Mills with Stansfield's, Ltd., of Truro. Enlargements probable in the spring.

CONNECTICUT.

East Killingly. Chase Woolen Co.; $50,000; Chas. D. Chase, pres. and treas.; Herbert G. Chase, vice-pres.; Warren D. Chase, sec. New company taken over plant formerly owned by Charles D. Chase.

Elmville. Elmville Worsted Co.; $50,000; Frank E. Holden, pres. and treas.; James H. Barnett, sec. and agt. Taken over mill formerly operated by Thistle Worsted Co.

Elmville. Glen Worsted Co.; W. K. Litch, pres. and supt.; F. F. Arnold, treas. Taken over business of Glen Worsted Mills, Harrisville, R. I., and started mill formerly operated by Davis & Brown Woolen Co.

Stafford Springs. Cyril Johnson Woolen Co. Purchased by A. I. Mitchell, formerly agent of Warren Woolen Co. To continue manufacture of same line.

ILLINOIS.

Rockford. Rockford Woolen Cloth Mfg. Co.; $40,000; E. R. Reitsch, T. K. Hicks and Philip Weingartner. Succeed Dyson & Platt.

MAINE.

Camden. Lincoln Woolen Co.; $10,000; Julius B. Waterman, pres.; Charles I. Lincoln, treas., supt. and buyer. Leased Mt. Battie Mill.

Dexter. Greenwood Woolen Co.; Charles and Edward Greenwood. Started old Abbott & Latimer mill on sackings and broadcloth.

MASSACHUSETTS.

Chapinville Whittaker, Robert, Co.; $50,000; James Whittaker, pres.; Robt. Whittaker, treas.; custom garnetting, picking, carding and carbonizing. Purchased Northboro Woolen Mills. Increased equipment to 4 garnetts, 6 pickers, 14 cards.

Franklin. American Felt Co. Purchased plant of the Franklin Felt Co.

Jamesville. S. G. Hall, formerly in the Mt. Battie Mill, Camden, Me., leased the Kent Woolen Mill.

Oxford. Stansfield Felting Co.; John Stansfield, prop.; felts. Bought Buffumville Mill and equipped for manufacturing felts.

Quinapoxet. Taylor & Bell have leased and are operating the Cyrus G. Wood plant.

Rochdale. Mill of A. Howarth & Son sold to American Woolen Co., who will operate as a 17-set mill.

MICHIGAN.

Monroe. Monroe Woolen Mills purchased by E. G. J. Lauer and I. S. Harrington. Changes in plant likely.

NEW HAMPSHIRE.

West Swanzey. Homestead Woolen Co.; H. W. Brown, prop. Operating old Granite Woolen Mills in manufacture of flannels.

NEW YORK.

Cohoes. Roff Underwear Co., Commercial Mill. Purchased by Frank B. Graves, Albany, N. Y., who will equip it for manufacture of cotton, wool, worsted and merino shoddies, etc.

PENNSYLVANIA.

Philadelphia. Crefeld Worsted Mills, Church St. and Adams Ave., Frankford; Wm. Secor, prop. Formerly Lee Worsted Mills.

Philadelphia. Greenholme Cloth Mfg. Co., Jasper and Orleans Sts.; Rothwell & Goodwin, props.; woolen and worsted goods; 16 looms. Formerly Sylvester Rothwell.

RHODE ISLAND.

Bridgeton. Premier Worsted Mills. Remove from Wickford to Inman Mill.

Hope Valley. Owen Mill property purchased by Mystic Woolen Co. and being operated as Mill No. 2.

VERMONT.

Springfield. Slack, John T., Corporation; $200,000. Succeeds W. H. H. Slack & Bro. and John T. Slack.

KNIT.

CANADA.

Ontario Hamilton. Moodie, J. R. & Sons, Ltd. Purchased plant, stock and good will of Princess Underwear, Ltd.

INDIANA.

Logansport. Majestic Knitting Co.; $50,000; J. H. Foley pres.; W. J. Uhl, treas., supt. and buyer. Taken over Logansport Underwear Co. To build addition.

MASSACHUSETTS.

Ipswich. Essex Hosiery Co.; $500,000; A. S. Porter, Jr., pres.; Chas. E. Ames, treas.; H. B. Brown, agt.; men's and ladies' high grade silk and mercerized. Operating plant of Brown Stocking Co.

Malden. Yale Knitting Co.; $75,000; Jas. B. Jamieson, pres.; Lester D. Marsh, treas. Succeeds Holmes Knitting Co. Contemplating addition.

Millbury. Worcester Knitting Mills. To change from knit underwear to women's and children's fine cotton underwear.

MICHIGAN.

Adrian. Adrian Knitting Co.; $200,000. Absorbed Lewis Knitting Co. of Sauquoit, N. Y., now run as a branch.

MINNESOTA.

St. Paul. Minnesota Knitting Mills Co. Formerly North West Knitting Mills of Brooklyn, N. Y. New machinery to be added.

NEW YORK.

Brooklyn. Angora Specialty Co.; $10,000; W. A. Bandler, pres.; S. F. Currick, treas.; A. M. C. Bounard, supt. Succeeds Angora Fur Co.

Mohawk. Mohican Knitting Co. Now operating plant of the Muidoon Underwear Co.

New York. Edmund Church Co.; $5,000; E. F. Church, pres. and treas. Formerly Alden Knitting Co.

Oswego. Hayes Knitting Co.; $30,000; Thos. J. Hayes, pres.; Neil J. and Ella A. Hayes. Operating plant of the Oswego Knitting Co. New machinery installed.

Utica. Oneida-Regal Textile Co.; $1,000,000. A merger of the Oneida Hosiery Co., Regal Textile Co. and Stittville Knitting Co.

NORTH CAROLINA.

Forest City. Dixie Knitting Mills. Old company dissolved. Being operated by C. A. Wilkie. Reported contemplating addition of machinery.

PENNSYLVANIA.

Allentown. Lehigh Mills Corporation. Wm. S. Norwell, gen. mgr. Leased plant of Southdown Knitting Co.

Allentown. Tisbest Knitting Mills; $100,000; Chas. F. Jones, pres.; Chas. J. Ross, treas. Succeeded Sorosis Silk Co.

Catawissa. Catawissa Knitting Mills Co.; $12,000; Thos. E. Harder, pres.; C. P. Pfahler, treas.; W. H. Laubach, supt.; women's mercerized hosiery. Succeeded Montour Knitting Mills.

Dorrancetown. Dorrancetown Hosiery Co.; $20,000; J. D. Baer, pres.; Chas. Birth, treas.; R. C. Werkheiser, supt. Combines plants of Birth & Weston and Drake Knitting Mills.

Harrisburg. New Idea Hosiery Co.; $100,000; W. G. Starry, pres.; John H. Landis, treas.; R. I. Passell. Takes over business of Well Knit Hosiery Co. To occupy new building, 50 by 90 ft., three stories.

Philadelphia. Continental Elderdown Co.; $25,000; Wilson H. Brown, Stanley R. Stager and E. K. Ring. Operating part of plant and equipment of the Leicester & Continental Mills; Arthur J. Unsworth, supt.

Philadelphia. Reliance Hosiery Co.; $25,000; Ernest J. Aucott, pres. and treas.; Jas. T. Hunter, sec. Taken over business of E. J. Aucott Hosiery Mfg. Co. Mill, damaged by fire, rebuilt and machinery replaced.

RHODE ISLAND.

Providence. De Luxe Hosiery Co.; $300,000. Formed by McCallum Hosiery Co. of Northampton, Mass., to operate silk hosiery department of Geo. E. Boyden & Son.

VIRGINIA.

Williamsburg. Chas. C. Groat purchased Williamsburg Knitting Mills. Preparing to operate. Additions probable.

SILK.

NEW JERSEY.

Paterson. Brawer Silk Co., A.; $125,000; Arthur, David and Abraham Brawer. Taken over quarters of Silber & Urdang in the Harding Mill.

Paterson. Franco-American Velvet Co.; $100,000; H. B. Crosby, pres.; E. Rivollier, treas.; E. Rivollier, Jr., agt. Succeeds Rivollier & Son.

Paterson. Milan Silk Co.; $50,000; Anthony Gross, pres.; Flavio Canova, treas., supt. and buyer. Succeeded Canova Bros.

Paterson. Rumler Mfg. Co. Occupying plant formerly run by Geo. Deiss, now located in the Schmutz Mill.

Plainfield. Mitchell, T. J. & Co. Taken over Watchung Silk Co. Enlarging and increasing equipment and removing Paterson plant to Plainfield.

NEW YORK.

Andover. Andover Silk Co.; M. A. De l'Harpe, pres.; John H. Faisant, supt. Taken over plant of Rochambeau Silk Co. Backed by Albert Godde, Bedin & Co. of France. Will add French looms to equipment.

PENNSYLVANIA.

Fleetwood. Fleetwood Silk Co. $50,000; Warren G. Hartman, treas. Purchased Fleetwood mill of American Silk Co.

Scranton. Scranton Throwing Co.; $150,000. Taken over throwing department of James Simpson & Co.

RHODE ISLAND.

Westerly. Lehigh Valley Silk Mill, Atwood Mill, Main St.; silk throwing. Branch of South Bethlehem, Pa.

MISCELLANEOUS.

DELAWARE.

Wilmington. Wilmington Mill Co. Formerly branch of Planet Mills Mfg. Co. of Brooklyn, N. Y. Taken over by A. F. Crichton.

MASSACHUSETTS.

Lowell. Gilet Carbonizing Co.; incorporated with capital of $5,000. Business moved here from Woonsocket.

Newburyport. American Textilose Co. New company taken over Peabody Mill. Will make new kind of product. Machinery importing Nov., 1911.

NEW YORK.

New York. Merchants' & Eclipse Sponging Co.; I. Levy, pres.; Joseph Welpin, treas. Consolidation of Eclipse Sponging & Finishing Co. and Merchants' Cloth Examining, Shrinking & Finishing Co.

RHODE ISLAND.

Bellefont. Imperial Printing, Bleaching & Finishing Co.; $100,000; John R. Butterworth, Jr., treas.; John R. Butterworth, Sr., gen. mgr. and buyer; printing and finishing of cotton fabrics. Taken over plant of Shawmut Finishing Co.

Pawtucket. Kingston Knitting, Dyeing & Bleaching Co.; $20,000; Frank A. Morrill, John J. Heffernan, Trubee Burrows. Taken over plant formerly operated as bleachery by Jas. F. Barry.

Enlargements and Improvements.

COTTON.

ALABAMA.

Anniston. American Net & Twine Co. Doubled capacity of plant.

Tallassee. Tallassee Falls Mfg. Co. Installed 500 new looms and new electric power equipment.

CONNECTICUT.

Bridgeport. Bridgeport Elastic Fabric Co. Building addition, 90 by 55 ft., 2 stories, for shipping, office, finishing and stock departments. Will add new machinery.

Bridgeport. Henkels, Alb. & E. Built new 1-story weave shed, 60 by 190 ft., increasing equipment to between 400 and 500 lace machines.

Killingly. Killingly Mfg. Co.; $500,000. New company bought plant of Williamsville Mfg. Co., building new 2-story mill, 120 by 220 ft. Reported will replace most of old equipment and increase to 50,000 spindles and 1,200 looms.

Middletown. Russell Mfg. Co. Building new addition, 50 by 75 ft., 3 stories high, to contain 60 looms for making narrow webbings. To be completed March 1.

Moosup. Aldrich Mfg. Co. Constructing new brick weave shed, 192 by 150 ft. Reported equipment will be increased to 1,600 looms.

GEORGIA.

Atlanta. Exposition Cotton Mills. Building new weave-shed, 100 by 300 ft., and installing 10,000 additional spindles, preparatory machinery and looms.

Barnesville. Aldora Mills. Built new 2-story loom shed, 100 by 240 ft.

Berryton. Berryton Mills. Have discontinued making hosiery, making yarns only, 10s to 16s, and have added 2,200 spindles.

Calhoun. Echota Cotton Mills. Added 24 looms to weaving department.

Carrollton. Mandeville Mills. Have built 3-story addition to main building and 100-foot addition to picker room, and added 10,032 spindles.

Columbus. Swift Mfg. Co. Additions made to dyeing department and picker house.

Covington. Covington Mills. Have added 5,000 spindles and accompanying carding machinery, also 150 looms.

Rome. Anchor Duck Mills. Contract let for 3-story addition, 80 by 100 ft.

West Point. Lanett Cotton Mills. Adding 208 automatic looms and several inspecting machines and erecting building for cloth room.

MASSACHUSETTS.

Bondsville. Boston Duck Co. Have build 4-story brick addition, 100 by 140 ft.

Boston. American Net & Twine Co. Erecting a 2-story and basement building at East Cambridge, 70 by 180 ft., of brick and heavy mill construction. To be completed Feb. 1, 1912.

Chicopee. Dwight Mfg. Co. Built new mill to take place of old No. 1 and No. 2 mills. Five stories and basement, 545 by 113 ft.

Fall River. Barnaby Mfg. Co. have added a story to one of their mills and installed 5,500 additional spindles.

Fall River. Capital of Lincoln Mfg. Co. increased to $1,250,000, to provide for equipment to produce medium fine goods.

Fall River. Pocasset Mfg. Co. added 186 looms to be used on wide goods.

Fitchburg. Grant Yarn Co. have built an addition, 3 stories high 70 by 75 ft.

Hudson. Thos. Taylor & Sons began work Sept. 4 on 4-story addition, 45 by 18 ft.

Lowell. Hamilton Mfg. Co. Building new mill, 4 stories, 300 by 150 ft., to take the place of Mills 1 and 2.

New Bedford. Beacon Mfg. Co. Building new weave shed, 150 by 309 ft.

North Adams. Hoosac Cotton Mills. To build large additions to weave shed and Eclipse Mills, also power plant.

NEW YORK.

Buffalo. Buffalo Textile Co. Capital increased from $20,000 to $75,000. Added four looms.

Cohoes. Harmony Mills; $3,000,000; reorganized; Geo. A. Draper, pres.; Albert Greene Duncan, treas. and mgr.; Geo. F. Payne, supt. Two million dollars expended for improvements and new machinery.

Lockport. Lockport Textile Co. Built addition and added 20 looms to equipment.

Lockport. Niagara Textile Co. Purchased land for new addition to be 180 ft. long.

NORTH CAROLINA.

Albemarle. Wiscasset Mills Co. Built 2-story brick addition for picker department.

Bessemer City. Harborough Co. Installed humidifying system in weave room. A new company, capital $100,000, operating the Mascot Mill.

Charlotte. Fidelity Mfg. Co. Installed 30 looms for weaving cotton damask. To start 20 more.

Durham. Golden Belt Mfg. Co. Built 3-story addition, 75 by 120 ft., to be used for bag printing and storage.

Forest City. Florence Mills. Installed machinery for finishing chambrays.

Franklinville. Randolph Mfg. Co. Installed 100 automatic and 100 plain looms.

Gastonia. Arlington Cotton Mills. Built addition and installed number of new combers.

Gibsonville. Mineola Mfg. Co. One hundred box looms installed to replace old equipment. Three napping machines added.

Hillsboro. Belle Vue Mfg. Co. New brick building, 50 by 75 ft., for raw stock and yarn dyeing.

Lexington. Dacotah Cotton Mills. Capital increased to $200,000: Changed from short chain pattern work to long chain beaming, added a slasher and manufacture a new line of goods.

Marion. Marion Mfg. Co. Contract awarded for the erection of new buildings for carding, spinning and weaving. Machinery contract awarded.

Newton Newton Cotton Mills. Built addition equipped with 60 looms, making Canton flannels.

Rockingham. Pee Dee Mfg. Co. Installed 24 dobby looms to run on colored goods.

Rockingham. Roberdel Mfg. Co. Beaming and slashing equipment installed in new addition 62 by 114 ft. Added 98 box looms.

Salisbury. Salisbury Cotton Mills. Added 34 looms and built addition for raw stock dyeing.

Spray. Nantucket Mills. Looms equipped with warp stop motions and new boiler installed.

St. Pauls. St. Pauls Cotton Mill Co. Increased output by addition of 4 cards, 1,940 spindles, 2 speeders and 72 winding spindles.

PENNSYLVANIA.

Glen Riddle. Welch, A. P. Mfg. Co. Company reorganized. Offices enlarged and newly equipped. Added 65 looms.
Philadelphia. Dawson, J. & E. Installed 12 looms for making carpets and automobile robes.
Philadelphia. Eastlake Mfg. Co. Contract placed for the erection of 3-story and basement factory building, 175 by 56 ft., at Leiper and Deal Sts.
Philadelphia. Ederer, R. J., Thread Co. Building 1-story addition, 50 by 175 ft., for spinning and twisting.
Philadelphia. Feldstein, Chas. H. & Co. Added 25 looms and also started an annex.
Philadelphia. Hagy, J. Milton, Waste Works. Built new 3-story mill, 52 by 55 ft. and storage shed 42 by 57 ft.
Philadelphia. Maurer F. W. & Sons Co. Leased additional space and installed 20 new looms.
Philadelphia. Niagara Thread Co. Taken increased space and installed additional machinery.
Philadelphia. Ontario Spinning Co. Replaced mules damaged by fire with 2,300 ring spindles. Will add 15 combers.
Philadelphia. Rajah Mfg. Co. Equipment doubled.
Reading. Reading Towel Mfg. Co. Incorporated with capital of $15,000. In new quarters at Hyde Park. Bleaching department added. Eight new looms to be installed.

RHODE ISLAND.

Pawtucket. Glencairn Mfg. Co. Added 50 German braiders.
Phenix. Interlaken Mills. Built new picker house equipped with new picking machinery. Added 24 new cards and 20 deliveries of drawing.

SOUTH CAROLINA.

Chester. Wylie Mills. Building new weave shed, 100 by 300 ft.
Fairmount. Fairmount Mfg. Co. Added 1,536 spindles and 40 looms.
Greenville. Monaghan Mills. Built new addition for cloth room. Old cloth room used as weave room, with 86 looms.
Greenville. Poe, F. W., Mfg. Co. Replaced 750 plain looms with 1,000 new automatic dobby looms. Added 10,000 new spindles. Purchased additional land.
Greenwood. Grendel Mills. Added 2,000 spindles.
Jonesville. Wallace Mills; $300,000. Formed to operate plant of Jonesville Mfg. Co. under Parker consolidation.
Lando. Manetto Mills. Building 2-story addition, 50 by 80 ft., for opening department and new napping and finishing equipment.
Whitmire. Glenn-Lowry Mfg. Co. Capital increased to $1,250,000. To erect addition to contain 30,000 new spindles. Now operating by electricity.

WOOLEN.

CONNECTICUT.

Mechanicsville. French River Textile Co. Completed large new weave shed and increased equipment to 200 looms. Added new electric power equipment.
Shelton. Sidney Blumenthal & Co. Erected 3-story concrete addition for finishing plant. Installed new boilers, filtration plant and other machinery.
Talcottville. Talcott Bros. Added two sets of 60-inch cards.

INDIANA.

La Porte. Wallace & Smith Blanket Mills. New building erected for dye house, finishing room, scouring and picker plants. Added 10 new mules.

KENTUCKY.

Franklin. Franklin Woolen Co. Rebuilding plant destroyed by fire.

MAINE.

Houlton. Houlton Woolen Mills. New addition 60 by 116 ft.
Springvale. Springvale Spinning Co. Springvale Spinning Co. Built 70 ft addition. Added 2,100 spindles, new drawing machinery and installed electric drive.

MASSACHUSETTS.

City Mills. City Mills Woolen Co. Occupying new mill built to replace one burned last December.
Holyoke. Farr Alpaca Co. Building new 1-story and basement weave shed. To add 600 looms.
Pittsfield. Berkshire Woolen & Worsted Co. Completed 68 by 50-ft. addition containing 6 sets cards and 3,600 new spindles.
Rochdale. Carlton, E. G. & Sons. Building 2-story addition, 90 by 50 ft., for enlargement of finishing machinery. To be completed Jan. 1.

MICHIGAN.

Eaton Rapids. Eaton Rapids Woolen Mills. Erecting 1-story fireproof building for dyeing, bleaching and drying departments.

NEW HAMPSHIRE.

Hillsboro. Hillsboro Woolen Mill Co. Built new cloth and sewing room. Installed new dresser.
Tilton. Tilton Mills. Building 3-story addition, 80 ft. long, for dye house, drying room, etc.

NEW YORK.

Albany. Huyck, F. C. & Sons. Built new 3-story addition, 110 by 88 ft. New machinery installed.
Amsterdam. McCleary, Wallin & Crouse. Purchased land for erection of 7-story warehouse, 200 by 80 ft. Also bought property formerly operated by Mitchell Bros. Will build power plant later.

OREGON.

Eugene. Eugene Woolen Mills Co. Added new set of cards and new finishing equipment.

PENNSYLVANIA.

Bristol. Gundy, W. H. & Co. Built 3-story concrete and steel addition, 38 by 168 ft.
Chambersburg. Melville Woolen Co. Built new picker house and installed additional machinery in other departments.
Philadelphia. Andrews Mills Co. Occupying quarters in new Bromley Mills, Frankford. Installed new dyeing and finishing machinery.
Philadelphia. Gordan, R. J. & Co. Leased another floor of their building. Installing additional looms and two new winding frames.
Philadelphia. Grover, John D. & Son. Built new warehouse, 80 by 100 ft., to replace one burned.
Philadelphia. Stetson, John B., Co. Erected new buildings at estimated cost of $330,000.
Philadelphia. Walker & Stine. Purchased 24 looms and installed same in new addition.
Philadelphia. Windsor Mfg. Co. Installing additional looms.

RHODE ISLAND.

Esmond. Esmond Mills. Built 1-story office building, 124 by 36 ft., 40 double tenements and boarding house.
Providence. Colored Worsted Mills. Built 1-story addition, 98 by 25 ft.
Westerly. Premier Worsted Mills. Built addition to dye house.
Woonsocket. Dunn Worsted Co. Contract awarded for new brick weave shed, 80 by 322 ft. To install 31 looms.

TENNESSEE.

Cleveland. Cleveland Woolen Mills. Installed 20 additional looms.
Springfield. Springfield Woolen Mills Co. Built addition, 60 by 60 ft., four stories.

WISCONSIN.

Cedarburg. Cedarburg Woolen Mills. Added one set cards, two mules and five looms.

KNIT.

ALABAMA.

Fort Payne. Florence Hosiery Mills. Added 15 new knitting machines.

CANADA.

Ontario, Hamilton. Chipman-Holton Knitting Co. Built new brick and concrete dye house.
Ontario, Paris. Penman's, Ltd. Installed two new pickers.

CONNECTICUT.

Addison. Glastonbury Knitting Co. Added new set of cards.

GEORGIA.

Rome. Rome Hosiery Mills. Have added 100 knitting machines.

ILLINOIS.

Champaign. Textile Mfg. Co. Built new plant and removed here from Chicago.

INDIANA.

Fort Wayne. Wayne Knitting Mills. Capital increased to $1,200,000; built addition, 45 by 145 ft., and adding 300 knitting machines.

South Bend. Stephenson Underwear Mills. New concrete power house, 40 by 60 ft., to contain two 54-in. water wheels producing 300 h. p.

MAINE.

Brunswick. Brunswick Knitting Mills, destroyed by fire, to be reorganized and rebuilt.

MASSACHUSETTS.

Great Barrington. Reliable Knitting Co. have added 50 knitting machines, 6 ribbers and 5 loopers to make finer goods.

Wakefield. Harvard Knitting Mills built brick addition, 178 by 94 ft., chiefly for storage purposes.

MICHIGAN.

Grand Rapids. Swiss-American Knitting Mills. Doubling capacity of knitting and bleaching and washing and finishing departments. Added 10 new knitting machines.

Saginaw. Clare Knitting Mills. Added five machines on mercerized and silk hose.

MINNESOTA.

Minneapolis. Northwestern Knitting Co. Building 5-story brick and concrete addition for finishing and water purifying. Also addition to power plant. Five-story addition to knitting department completed.

MISSOURI.

St. Louis. Chester Knitting Mills, Chester, Ill., leased Drummond Factory Bldg., and will move part of equipment. May change name to St. Louis Knitting Mills.

NEW HAMPSHIRE.

Belmont. Ipswich Mills. Changing from steam and water power to electricity.

Hillsboro. Contoocook Mills Corp. formed with capital of $750,000 to take over plant of Contoocook Mills. Enlargements and improvements probable.

Manchester. Elliott Mfg. Co. Built 70-ft. addition, mainly for storage purposes.

NEW JERSEY.

New Brunswick. Norfolk & New Brunswick Hosiery Co. Added one story to plant and two new dyeing machines and a stock dryer to equipment.

NEW YORK.

Athens. Athens Knitting Co. Installed new machinery for the manufacture of sweaters.

Broadalbin. Broadalbin Knitting Co. Built addition, 40 by 60 ft., also concrete storehouse, 42 by 72 ft.

Elmira. Campbell Knitting Mill Co. Installed new filtration plant for bleaching purposes.

Fonda. Fonda Glove Lining Co. Building 3-story brick addition for packing and shipping, stock and knitting and winding departments.

Hudson. Swansdown Knitting Co. Built 2-story for picking, carding and spinning.

Ilion. Sterling Mills. Added machinery for making high grade sweater coats.

New Hartford. Olympian Knit Goods Co. Capital increased from $60,000 to $150,000. Added two stories to part of building. Increased equipment of knitting and sewing machines.

New York. Franklin Knitting Mills. Installed equipment for making silk neckties.

Oswego. Lastlong Underwear Co. Built addition, 50 by 75 ft., and equipped same as bleachery.

Perry. Perry Knitting Co. Built new concrete picker house, 95 by 100 ft., for pickers, lappers and garnetts, also new dry house and installed new vertical drying machines.

Port Leyden. Port Leyden Knitting Co. Capital increased to $60,000. To be used to purchase machinery for making a new combination garment.

St. Johnsville. Union Mills, Royal Gem Dept. Building addition to employ about 200 new hands on women's cotton underwear.

Sherburne. Utica Knitting Co. Foundation laid for two new buildings, doubling floor space, one a new engine and boiler room. Two new boilers, a 600 h. p. condensing engine, 30 flat cards, 6 pickers and 8 roving machines included in new equipment.

Utica. Capron Knitting Co. Built 3-story and basement brick mill, also 1-story addition to an old building.

Utica. La Tosca Knitting Co. Added another story to mill, giving 15,000 sq. ft. additional floor space.

Warsaw. Brown Knitting Co. Building addition on front of main building for office purposes. Installed new boilers and bleaching equipment.

Cleveland. Rich, N. J. & Co. Built and equipped new mill on Euclid Ave., 4 stories, 100 by 360 ft., doubling capacity.

Piqua. Piqua Hosiery Co. Erecting new concrete mill building, 4 stories, 115 by 67 ft. To be completed March 1. Will greatly increase capacity. Old mill to be used as warehouse.

Toledo. Dolphin Hosiery Co. Capital increased from $10,000 to $20,000. Installing additional machinery.

PENNSYLVANIA.

Adamstown. Hope Hosiery Co. Added a dye house.

Bloomsburg. Bloomsburg Hosiery Mills. Building large addition.

Easton. Chipman Knitting Mills. Installed 180 knitting machines for making new line of ribbed goods.

Easton. Easton Knitting Mills Co. Added 30 knitting machines and 1 winder.

Hamburg. Hamburg Knitting Mills & Bleach Works. Added department for bleaching knit goods for the trade.

Lebanon. Deeds, H. K. Plans prepared for new 3-story brick building at present location.

Lykens. Est. of John R. Fisher. Added 12 knitting machines and a line of silk hosiery.

McVeytown. Allensville Hosiery Mills. Installed finishing plant and hot and cold press.

Philadelphia. Alphia Knitting Mills. Built new 5-story factory building at 6th and Spring Garden Sts.

Philadelphia. Alberta Knitting Mills. Removing to new quarters in Germantown. Added 5 knitting and 4 sewing machines. Further additions to be made.

Philadelphia. Aucott, E. J., Hosiery Mfg. Co.; $25,000. Formed to continue business of E. J. Aucott. Plant which was burned rebuilt and new machinery installed throughout.

Philadelphia. Brown-Aberle Co. Installed 12 new full fashion frames.

Philadelphia. Brown, Thos. E. & Sons. Built 6-story addition, 64 by 38 ft. Installed 19 new full fashion frames.

Philadelphia. Indian Braid & Lace Works. Added 15 new knitting looms and 100 braiders.

Philadelphia. Munzy, H. L., Hosiery Co. Added 25 knitting machines.

Philadelphia. Regal Silk Hosiery Co. Installing machines for making new grade of goods.

Philadelphia. Taubel, Wm. F. Leased additional space at Coral and Adams Sts. Increasing equipment.

Philadelphia. Wexler Bros. Added 19 knitting and 14 sewing machines. To remove to 61-63 N. Second St. Further additions to be made.

Reading. Berkshire Knitting Co. Will build new modern dye house. Built 2-story addition. Added 40 full fashion machines.

Reading. Gehrke Knitting Mills. Building new 2-story addition. Equipment to be increased.

Reading. Miller, S. S. Built new 2-story and basement building, 150 by 36. Machinery installed and in operation.

Richland. Richland Hosiery Mill. Installed new boiler and changed from gasolene to steam. May change from half hose to ladies' goods.

Watertown. Shaughnessy Knitting Co. Increased capital from $40,000 to $75,000. Built new 3-story mill. Installing new machinery.

NORTH CAROLINA.

Chapel Hill. Durham Hosiery Mills to build mercerizing plant at local branch.

Durham. Chatham Knitting Mills Co. Plant burned. Erected 1-story frame building, 33 by 125 ft., and installed gasoline engine. Will experiment before refitting.

Durham. Durham Hosiery Mills. Built 3-story addition, 113 by 135 ft., for office purposes, storage room and finishing department.

Haw River. Regina Hosiery Co. Built new brick mill, 50 by 150 ft., made necessary by expiration of lease of old quarters.

Raleigh. Durham Hosiery Mills. To establish small branch plant here for looping.

Winston-Salem. Maline Mills. Added 5 knitting and 12 sewing machines and 1 napper.

OHIO.

Cleveland. Green-Haas-Schwartz Co. Completed addition to mill. Installed 10 new looms and 25 new knitting machines.

Royersford. National Underwear Co. Added 15 knitting machines.

South Bethlehem. Chipman Knitting Mills. Branch of Easton. Equipment for looping and welting. May put in knitting machinery.

Spring City. Progressive Knitting Mills. Occupying former quarters of Natl. Underwear Co. Equipment increased. Further additions to be made.

RHODE ISLAND.

Pawtucket. Pawtucket Hosiery Co. Incorporated with $100,000 capital. Quarters being enlarged. Will install 55 new knitting machines.
Woonsocket. Rathbun Knitting Co. Built new spinning mill containing 3 sets and 1,440 spindles.

TENNESSEE.

Knoxville. Appalachian Mills. Capital increased to $100,000. Equipment increased. Purchased building of Knoxville Woolen Mills and will install spinning machinery.
Maryville. Maryville Hosiery Mills. Building entire new plant to replace one destroyed by fire.
Rockwood. Rockwood Mills. Built power plant, 42 by 42 ft., installed 200 h. p. engine, sprinkler system and 20 footers, 40 ribbers and 8 loopers.

VIRGINIA.

Suffolk. Cobb, A. H. & W. E. Building and equipping new mill to replace one burned.

WISCONSIN.

Portage. Portage Hosiery Co. Built addition, 40 by 100 ft., 3 stories high. Also new dye house.

SILK.

CONNECTICUT.

Mystic. Rossie Velvet Co. Built addition to dye house, 84 by 41 ft.
Norwich. Martin, J. B., Co. Two-story brick addition, 60 by 50 ft., for storage of warps and cloth room.
Shelton. Blumenthal, Sidney & Co. Installed new boilers, filtration plant and power and light plant in No. 1 Mill.
South Manchester. Cheney Bros. Built new 3-story building, 100 by 425 ft., also extensions between buildings 1 and 2 and 2 and 3.

MASSACHUSETTS.

Holyoke. Goetz Silk Mfg. Co. Building new mill, 3 stories, 50 by 250 ft.

NEW JERSEY.

Dundee Lake. Natl. Silk Dyeing Co. Building addition, 60 by 100 ft., for piece dyes.
Paterson. Caspers Silk Co. Built new 4-story brick mill, 60 by 150 ft.
Paterson. Lake View Silk Mills. Leased additional space in Van Kirk Mill and adding 50 looms.
Phillipsburg. Standard Silk Co. Built addition to dye house, 62 by 137 ft., equipped for skein and piece dyeing.
Pompton Lake. German Artistic Weaving Co. Built addition containing 20 new looms.
West Hoboken. Schwarzenbach Huber Co. Built 5-story building on site of old weave shed.

NEW YORK.

Binghamton. Miller, Co., J. & D. D.; $100,000; James and David D. Miller and George Fowler; broad silk goods. Building new factory, 235 by 65 ft., 4 stories high; 60 looms.
Glenham. Glenham Embroidery Co. Organized by Loeb, Schoenfeld & Co., New York, to manufacture lace curtains and embroideries. Taken over old Groveville Carpet Mills and making extensive changes.

NORTH CAROLINA.

High Point. Stehli & Co. Completed arrangements for the erection of a new mill, 124 by 144 ft., to contain about 100 looms.

PENNSYLVANIA.

Dickson City. Bliss Silk Throwing Co. Added 7,600 new spindles.
Emaus. Frederick, J. H. Built addition, equipped with 30 broad looms.
Lenni. Victoria Plush Mills. Built and equipped new brick dye house.
South Bethlehem. Progressive Silk Co. Removed here from Paterson. Purchased broad silk equipment of Bitzer Bros. of Doylestown. Plan to install 25 more looms.
Sunbury. Susquehanna Silk Mills. Installed equipment for printing, extracting and finishing fabrics up to 54 inches.
Wilkesbarre. Sheldon & Leach, Paterson. Leased building and will move here with additional equipment.
Williamsport. Stearns, John N. & Co.; Installed 200 new broad silk looms to replace old equipment.

MISCELLANEOUS.

CONNECTICUT.

New London. Thames Dyeing & Bleaching Co. Brick addition, 55 by 40 ft., to bleaching department.
Norwich. U. S. Finishing Co. Three-story brick and concrete building, 130 by 175 ft.
South Norwalk. Cash, J. & J., Ltd. Built addition doubling plant.

MAINE.

Lewiston. Lewiston Bleachery & Dye Works. Addition 40 by 80 ft. To build new storehouse.

MASSACHUSETTS.

Indian Orchard. Hodges Fibre Carpet Co. have installed a number of new art-square looms.
Lowell. Lowell Bleachery. Built new power house, 1-story, 67 by 30 ft.
Mansfield. Mansfield Bleachery. Built addition to finishing department, equipped with imported embroidery finishing machines.
North Adams. Windsor Print Works have added 30 electric motors in different departments.
North Brookfield. Oxford Linen Mills. Building power house, 40 by 50 ft., for 240 k. w. dynamo. Completed new weave shed to house 250 looms.
North Dighton. Mt. Hope Finishing Co. Building brick addition, 100 by 60 ft. Reported further enlargement contemplated in spring.
Norton. Talbot Wool Combing Co. Built 135-ft. addition to scouring department.
Waltham. Waltham Bleachery & Dye Works. Built new engine room and boiler house.
Worcester. Worcester Bleach & Dye Works. Rebuilding department destroyed by fire.

NEW JERSEY.

Paterson. Lamond & Robertson Co. Installed spinning plant to spin tube yarns for their own use.
Paterson. Morton Mills. Added 11 new looms. Planning addition for warping and winding machinery. Increase in weaving department also considered probable.

NEW YORK.

Chadwick's. Utica Willowvale Bleaching Co. Added extension to main building, 150 ft. long, to enlarge kier and brown room.
New York. Queen Braid Works. Removed to 22 W. 17th St. Added 90 braiders and 9 knitting machines
Wappinger's Falls. Garner Print Works & Bleachery. Installed a number of new printing machines.

PENNSYLVANIA.

Allentown. Lehigh Bleachery & Dyeing Co. To build addition to bleaching department, to contain 2 new cotton piece-dyeing machines, 3,000-lb. dyeing machine and a baling press.
Philadelphia. Harvey Fibre Carpet Co. Built new power plant, 42 by 54 ft., 21 ft. high.
Philadelphia. Hellwig Silk Dyeing Co. contemplate enlargements representing an outlay of $250,000.
Philadelphia. Hulton Dyeing & Finishing Co. added another story to part of their plant. New dryers and other equipment to be added. Have installed department for dyeing artificial silk and ramie.
Philadelphia. Orianna Bleach Works, John F. Davidson, installed department for bleaching of cotton hosiery.
Philadelphia. Phoenix Dye Works fitted up new department for dyeing fast blacks and colors on silk hosiery and for bleaching silk hosiery on peroxide system.
Philadelphia. Providence Mills Co. Plant damaged by fire. Building repaired and new machinery installed. In full operation. Bleach cotton and linen damasks and crashes.
Reading. Neversink Dyeing Co. Building addition, 45 by 45 ft., for laboratories; 200 h. p. boiler installed. Contract let for new filter plant.

RHODE ISLAND.

Woonsocket. Plant of Rosemont Dyeing Co. destroyed by fire, rebuilt and equipped.

WORSTED YARN COSTS IN ENGLAND

BY JAMES STRAND

One who has been interested in the statement of Bradford costs on a worsted fabric asks for light on the English costs of manufacturing worsted yarn. The inquiry is not made any easier to deal with by the fact that worsted yarns are of many kinds and made by people specially equipped for one sort and not for others. The manufacture is divided. The spinner is generally not a comber and ordinarily the person who knows the combing does not know the spinning part. Then it is the case, as every investigator soon learns, that English methods of cost accounting in the worsted trade are crude and often inexact. Exact records which in America are usual, are almost nonexistent in the English trade.

It can be said with confidence that, except in a rough way, many spinners cannot tell where they have made money or how they have lost it. So far as they are able, they buy at the bottom and sell at the top and are guided more by the prices others are taking than by minute and perfect knowledge of the costs in their own mill. The typical American might expect the typical Englishman to be able to trace every purchase in its course through all departments and to put his finger upon every pound of waste or loss, but in this the American would be disappointed. The Bradford spinner reckons his waste, but it is the total he deals with and not the waste on individual lots. He takes stock yearly or half-yearly and by the process of simple division learns his cost per pound per operation or round of operations. As a cautious man he puts through an occasional trial lot, accounting diligently for the whole of a measured quantity, but the difference between this and a continuous record need not be enlarged upon. The matter is mentioned as a cause of the absence of certain details and of differences which will be seen later. While it is not possible to come to the very closest quarters with Bradford yarn costs, it is fortunately not impracticable to obtain a general idea.

COST OF COMBING

The tariff charges issued by the Federation of Woolcombers in Bradford is a statement of costs as the topmaker or spinner who does not comb knows them. There are the charges per pound for scouring and combing wools on commission and they leave a profit.

Merino Wools (all above 56s quality).

	d.	cts.
Tearing, 5 to 1 and over	2¼	4½
4 and under 5 to 1	2½	5
3 and under 4 to 1	2¾	5½
2 and under 3 to 1	3	6
under 2 to 1	3¼	6½
Burring, extra	¼	½
Gilling-in	¼	½

Carding Crossbred.

56s	1⅞	2¼
50s—tearing, 7 to 1 and over	1¾	3½
tearing, under 7 to 1	1⅞	3¾
36s to 46s—tearing, 8 to 1 and over	1½	3
tearing, under 8 to 1	1⅝	3¼
Burring, extra	⅛	¼
Gilling-in	¼	½

Preparing.

32s, 36s, 40s	1⅛	2¼
Over 40s	1¼	2½
Slipe and skin wools, extra	⅛	¼
Burry and seedy wool	¼	½
Gilling-in	¼	½

Scouring Only.

Wools	⅝	1¼

The prices are based on the weight of top returned to the owner and are about 12 1/2 per cent. higher than those which ruled before the summer of 1907. The term "Tearing 5 to 1" means, of course, wool yielding 5 pounds or more of top to one pound of noil. On their face these figures cannot carry a big profit per pound. What the profit is at any given time is partly a matter of the cost of oil, alkali and leather, which three items in a statement an old comber has given to me, compose 30 per cent. of the expenses of combing. This statement refers to ten years ago when these supplies were cheaper, but the oil was the best obtainable quality and it is probable that commission combers do not all use the best. Wages also have advanced in the interim, but not in proportion to the speeding-up of comb circles. Labor in the statement in point is 45 per

cent., power 5 per cent., taxes 5 per cent. and rent and depreciation each 7 1/2 per cent.

This record is closely confirmed by figures which have been published concerning the Greenholme Mills of William Fison & Co., Ltd. From a table designed to show the proportion of wages in worsted materials in their successive stages of manufacture it is clear that wages in the combing department in a 5-year period were 44.6 per cent. of the total operating cost. Materials were 28.4 per cent. and other expenses 27 per cent.

Combers are differently placed in such matters as water-supply, cartage and engine economy. Some find a profit in recovering grease from the wash bowls and this possibility of revenue varies according to the greasiness of the wools received. It is plain that some wools nominally of the same description must be more profitable all round that others that are combed at the same price. The amount of night work and of idle machinery and the ability shown in management affect the narrow margin powerfully, and it would be difficult to say with certainty what profit the standard prices represent—possibly 1/4 cent per pound on coarse and 1/2 cent on fine wools.

COST OF SPINNING

There is no definite cost of spinning in Bradford mills and in the ordinary way of trade "cost of spinning" is understood as including drawing. Commission firms undertake drawing without spinning in some instances and a commission spinner's quotation for drawing is given below, being copied from a letter dated Sept. 29, 1911:

Our prices per pound for drawing anything up to 10 inches long are:

drams.	d.	cts.
1 8/10	.2	4
2	1¾	3½
2 1/2	1⅝	3¼
3 to 3 1/2	1½	3
4	1 7/16	2⅞
4½ to 5	1¼	2½
6	1	2
7	1	2

These prices were the response to an offer of work and they include the profit of the firm. The dram weights are those of 40 yards of rovings made from top delivered by the comber. The prices are rather higher than those of firms who undertake spinning as well. For example, a spinner in estimating the cost of drawing a 40s top for spinning to 2/32s assesses the cost not at 2 cents but at 1 1/2 cents. The latter is presumably closer to the net cost.

Treating doubling as a separate operation, it is found on the evidence of quotations for 2-fold as against single yarn that 1 cent is a very general addition made to cover this expense. One cent is the price charged by commission spinners dealing with counts of 40s and below and 1 1/2 cents per pound is named in the directions given for yarn-costing in an annual publication. Again there is the unbiased authority of a retired manager for saying that his twisting on an average cost nearly 2 cents a pound. The latter testimony is perhaps explicable by a preponderance of high counts. There are people enough ready to double low and medium counts at 1 cent.

It has been said that it is customary to regard gilling, drawing, roving and spinning as one. During the last two or three years this has been a well-paid operation and the margin between price of tops and price of yarn at the same moment has been no criterion of what the work would be undertaken at in an extremity. Now that affairs are less pleasant and orders less profuse prices for yarns and tops are drawing nearer together. A merino spinner of the first rank is ready in case of need to sell 64s quality spun to 2/24s at a margin of 10 cents between top and yarn. The 10 cents includes drawing, spinning, waste, loss, discount and profit and it displays his wish to obtain orders for thick counts. The same quality spun beyond 2/32s is subject to an advance, and were 2/24s at the same rate of profit the margin would be 12 cents instead of 10. Similarly in crossbred yarn, prices are descending from the heights and on such a count as 2/16s spinners are ready to do the work and stand all risks for a margin of 8 or 9 cents. These are signs of a return to normality and afford some clue to the prices at which it is not altogether unprofitable to work. They do not represent actual net cost. Neither did

the lowest prices known to Bradford history reflect true costs. When 2/60s yarn was being booked at 11 cents per pound on the cost of tops, the price stood only as a sign of what spinners would endure for a short time rather than close. They were then losing money as fast as in later times they have been making it. A commission spinner with no waste or discount to allow for gets a satisfactory price for 2/60s when paid 18 cents per pound today. Single 60s for dress goods are taken on commission at 1 shilling per gross (10 cents per lb.) regularly.

A special equipment allows spinners to do many things that an average plant cannot do. Single 12s have even been less spun for 2 cents, which is approximately the price of drawing alone. It is reasonable to infer that extraordinarily little drawing was done. Much depends on the relations between the spinable length of the top and the required count of yarn. Obviously wheels have to go slower in spinning "all out" than when a comfortable margin of length is in hand. Forties tops have for years at a time been spun to 2/32s on a 10-cent margin. Forties tops at 16 cents were turned into 2/32s yarn at 26 cents (2 1/2 per cent. discount) regularly, although spinners refuse to think of such prices at present. A representative costing for this trade was:

Top	16	cents
Waste	1½	cents
Discount	1	cent
Drawing	1½	cents
Spinning	6	cents
	26	cents

The transaction was a poor one for the spinners, but at that particular time one of them was given a 10-cent margin to turn 56s top into 2/32s. Instead of running the front rollers at 38 revolutions he drove them at 50 and got a better spin by doing so. The longer fiber required less twist, the added speed meant added output and the spinning would have been about as profitable at 4 cents as the 40s quality at 6 cents. The item illustrates the difficulty of reducing the costs of spinning of particular counts to a fixed formula. The factors are not counts alone, but the character of top and the speed that can be attained without making undue waste or faulty yarn.

Flyer-spinning is not usually carried beyond single 20s or 24s and the usual basis for costing is single 16s. According to one not entirely disinterested witness, a spinner who gets 6 cents for spinning and drawing single 16s, 2 cents for waste and sinkage and 1 cent to cover discount is "not losing money." The business is not a bonanza, but it enables a spinner with low capital charges and ordinary wages to live and pay his way. Spinning 1/16s at 6 cents, his price at the ordinary rate of advance would be 8 cents for 1/24s or 9 cents for 2/24s, which is a materially better rate than that named for 2/32s in the preceding paragraph. Higher counts are usually cap-spun and ring-doubled and the basis price at which the commission-spinner aims, but does not often get, is 5 cents for 1/16s with an advance of 1 cent for counts up to 1/40s.

Recently commission spinners have been able to command for 2/24s 6 cents for work alone, apart from waste, sinkage and discount. Since the slackening of demand the price has been 5 1/2 cents, with prospects of a reduction to 5 cents, out of which the man who undertakes drawing and spinning will have to live. Upon the understanding that the prices cover the cost of operation (but not waste, etc.), I put in a list drawn up by one who keeps a commission-spinning account for purposes of his own business as a regular spinner. The prices are approved as a fair average by one who puts tops out to spin by commission spinners:

2/40s	9	cents
2/36s	8	cents
2/32s	7	cents
2/28s	6½	cents
2/24s	6	cents

A sample of 2/32s yarn spun from carded 46s top is sent with this report. The price of the top is 29 cents and the lowest accepted price for the yarn 43 cents. The margin of 14 cents is satisfactory and indeed en-

viable. There follows a statement of how this is costed by one well qualified to speak:

Top	29 cents
Waste and sinkage	2½ cents
Drawing and spinning	7 cents
	38½ cents
Profit	4½ cents

The allowance for waste is more generous than in some preceding examples and it is perhaps worth saying that the estimate is by an authority who insists that the fault of too many English spinners is that they have not known how much to allow for waste. There are those who would not reckon on more than 5 to 6 per cent. of waste (say 1.74 cents) and more than 1 per cent. of invisible loss (say .29 cents) at most. The allowance of 2 1/2 cents is at least prudent and is materially more than the sanguine spinner, pinched for want of work, is tempted to estimate upon. There is strong reason for saying that failure to recognize the loss in waste has caused the downfall of many Bradford spinners.

The foregoing particulars make no pretence of exhausting the inexhaustible subject with which they deal. They state the facts as far as they are ascertainable and verifiable and for what interest it may have figures are appended showing what the relative costs have been in a large and well-managed Bradford worsted mill:

	Drawing	Spinning	Drawing and Spinning
Rent	12	12	12
Power	6	11	8½
Taxes	7	4	5½
Depreciation	8	6	7
Wages	54	57	55½
Salaries	10	8	9
Sundries	3	2	2½%
Total	100	100	100

These figures are authentic records from the departmental books and the proportions hold good for that mill. It is to be expected that there must be differences of experience. Rent and taxes may stand for less and in mills treating only crossbred and thick counts less labor will be employed in the drawing department. The particulars are given with the intention of showing what the respective weights of the different items have been. Their accuracy is in no way impugned by the fact that the element of wages is considerably heavier than in the spinning department of the Greenholme Mill which has been mentioned. It appears from Morris Fison's account that in turning tops into yarn their wages bill had been 38.4 per cent. The circumstance that these people are largely mohair spinners would have some influence in accentuating the disparity.

COTTON YIELDING TREES

BY LOCK HAVEN

There are two species of Brazilian trees which are of interest to the commercial world because of their possibilities as producers of cotton fiber. These trees can be grown in regions where it is impossible or, at least difficult, to raise ordinary cotton. No other country in the world possesses so large an area of land suitable for growing cotton as Brazil, and since it is possible to cultivate trees for the production of cotton fiber on land not adapted to ordinary cotton growing, Brazil may in time supply large quantities of the world's cotton.

One of these cotton producing trees is called "Barriguda" (*Chorisia crispiflora* Kth.), a member of the bombax (*Bombaceae*) family of plants. The tree is so called on account of the enormous swelling of its trunk immediately above the base, which is its chief distinguishing characteristic (Fig. 1). The tree grows 25 to 35 feet in height and from 4 to 6 feet in diameter. The trunk tapers from the great bulge in the middle to a point about 12 feet above the ground from which the branches issue. The trunk is covered with hard and sharp thorns. The pods in which the cotton grows are from 5 to 8 inches long and from 2 to 4 inches in diameter. The fiber is coarse and white and adheres closely to the seeds, which are somewhat smaller than peas. While the fiber is long and rather strong, it is too coarse for use in textiles of

any degree of fineness. It may be used successfully in the fabrication of blankets, cotton twine, and a large variety of other materials.

The home of this tree is in the elevated portions of central and southern Bahia. It

FIG. 1. BARRIGUDA, A SPECIES OF COTTON YIELDING TREE.

grows to a lesser extent in the State of Pernambuco, and seems to flourish on land from 1,000 to 1,600 feet above sea level, where the temperature of the air frequently drops to 38° and 42°.

The other tree is the "Imbirassu" (*Bombax tomentosa* St. Hil.), which yields a much finer cotton, of a brownish color, exceedingly light, but hardly long enough to spin well, and resembles eider down. Imbirassu is a name of Indian origin given to it because of its peculiar and characteristic bark. The corrugations of the bark form diamond-shaped patches, the inner portions of which have a bright, greenish-red, and glossy surface. The seed pods in which the cotton is developed are about 10 inches long and from 1 to 2 inches in diameter. When the pods open and the ripe cotton comes out, they take on a round shape from 8 to 10 inches in diameter. The fiber adheres to the seed and is so light and fluffy that it is easily wafted through the air by the slightest wind. Occasionally this cotton is used for stuffing pillows, and when properly prepared is as soft and downy as the lightest and best

FIG. 2. IMBIRASSU, THE COTTON TREE IN THE BACKGROUND.

feathers, showing no tendency to mat and harden with use. The inner bark of this cotton tree is also utilized by the inhabitants for a good many purposes. It has a remarkably strong fiber and strips one-half inch in width will, without any preparation, sustain a weight of from 50 to 100 pounds. The tree is most abundant in the Province of Minas Geraes, but it is also found in central and more elevated portions of Bahia.

Both of the trees are hardy and long lived, 75 to 100 years being apparently a fair average for the period during which they bear cotton fiber, while the common cotton plant (*Gossipium* sp.) bears in many parts of Brazil for 15 to 25 years without any cultivation whatever. As the demand for cotton increases, Brazil will doubtless witness within the next generation an extension of its cotton industry, and when such a time comes its cotton-yielding trees will attain an importance equal to that of the Kopak tree (*Eriodendron anfractuosum*) of the East Indies and Africa.

REMOVING SPOTS AND STAINS FROM TEXTILES

BY ROBERT DANTZER

Translated from the French by the Editor of the Textile World Record.

(Continued from November.)

Water. Certain fabrics, especially silks, when they are left too long in a damp or badly ventilated place, become covered with small spots or specks which constitute a very serious defect. These spots can be removed only when they are of recent origin. Under such conditions it is necessary to roll the fabric in a piece of cotton cloth, slightly moistened, and to leave the roll in a moderately humidified chamber for about twenty-four hours. Spots are also caused by drops of rain falling on delicate fabrics and destroying the luster. To remove such spots it is first necessary to rub the fabric with a soft brush or a piece of flannel in order to remove any dust that may be adhering to the cloth. The fabric is then spread on a table and moistened slightly, either with water or steam, after which it is left some time under a slight pressure along with a piece of fine cotton cloth. This operation seldom fails to restore wool and silk fabrics to their original appearance.

Ink. Writing ink is usually made of vegetable materials and consequently can usually be removed by repeated washing combined with soap. The same is true of ink made of sulphate of iron when the spots are of recent origin. In the latter case, however, only the non-metallic part of the ink is removed, consequently there is left a rusty spot caused by oxide of iron which is removed by saturating the spot either with dilute sulphuric or hydrochloride acid. When the spots have been on the goods for some time they are difficult to remove. If the cloth is white it is first washed in pure water and then the spots are covered with a thin coat of powdered oxalic acid which is rubbed into the fabric with a fine sponge. If this does not remove the spots the operation is repeated, but with the addition of chloride of tin dissolved in water. Chloride and the hypochlorites can also be used on white cloths, but they generally leave a yellow or rust colored spot which is removed by moistening the cloth with a solution of oxalic acid. When the spots have been formed on dyed goods the cloth is first rinsed in pure water and then in a soap solution, next moistened with hydrochloric, sulphuric or acetic acid, and finally rinsed again in clear water. These spots cannot be removed from silk goods.

Fruit Stains. When the spots are on white cloth made of vegetable fiber the fabric is first rinsed in clear water and then handled in a soap solution which usually removes the spots. If the spots have been on the goods for some time it is necessary to pass the cloth through a solution of sulphuric acid. Wool and silk goods are first soaked, then sulphured. When dyed goods are being treated the operator first rubs the spots with the ends of his fingers which have previously been dipped in a weak solution of sulphuric acid (10 to 12 drops in a glass of water). Rinsing in clear water then removes the last traces of acid. This method is suited for spots caused by strawberries, raspberries, gooseberries, cider, pears, wine, beer, herbs, sugar and other vegetable products which are only slightly acid.

Tar. Spots made by tar are removed with turpentine, refined alcohol, sulphuric ether and benzine; the last two are preferable for silk. Butter can also be used. A thin coat of butter is spread on the spot and rubbed with a brush, cloth or sponge. Then the fatty substance is removed with benzine.

Grease Spots. These are very common. Benzine is usually employed for removing them. After the cloth to be treated has been spread on a folded towel, benzine is applied with the aid of a roll of white cloth or a very fine sponge. The spots are then rubbed with a dry cloth. If velvet is being treated the rubbing with cloth should be omitted as it damages the pile. If the fabric has been dyed a delicate shade, or if it is glazed silk, circular stains around the spots are avoided by first covering them with another fabric, after which powdered Briancon chalk, pipe clay, ashes or other absorbent earth is sprinkled over the goods. On cloths made of vegetable fibers several hot soapings are usually sufficient. For wool goods the process is as follows:

A. Turpentine is first applied with the aid of a fine sponge and then the cloth is rubbed. Another application is made and then Briancon chalk, pipe clay, ashes or other absorbent earth is sprinkled over the goods and left for an hour or two. The powdered earth is then removed carefully with a brush. If the absorbent material has left any stains they are removed with bread crumbs.

B. The cloth is spread between several sheets of blotting paper with silk finished paper placed on top. The grease is then melted by passing a hot smoothing iron over the material. The same result is reached by applying hot coals in a wet bag or by using a hot spoon. The heat melts the grease which is absorbed by the blotting paper. To be successful this method should be carried out very carefully, otherwise the spots will reappear at the end of several days.

C. If the cloth is very fine and delicate the spots are saturated with alcohol. Two or three sheets of silk finished paper are placed over them and rubbed with a hot smoothing iron.

D. If the cloth is dyed with a light shade or has a moire finish, several drops of alcohol are applied to the grease spot and the fabric is then covered with fine linen cloth over which a hot smoothing iron is passed. When the grease has been almost entirely removed the fabric is saturated with sulphuric ether. Grease spots can be removed from silk by the aid of a hot smoothing iron and silk finished paper. Benzine, ammonia, ether, egg yolk and the absorbent earths are also used.

The Juice of Herbs. The same process as for fruit stains.

Oil Spots. The same process as for grease spots. It should be added, however, that spots caused by illuminating oil are more difficult to remove than the others, especially if they have been on the goods for some time. It frequently happens that they cannot be removed from the goods.

Liquor Spots. These spots are removed from white fabrics by washing in a soap solution and then passing through sulphuric acid. Dyed goods are first moistened with a solution or a color that has produced the spots. Water is then applied at once and the cloth rubbed lightly. If this does not remove the spots a solution of citric or hydrochloride acid is applied, providing the colors will stand these acids. The acid is then neutralized with ammonia.

Paint Spots. The same process as for oil spots.

Pitch and Resin. These spots are removed with alcohol. It is usually sufficient to saturate the goods with the liquid and then rub carefully. Turpentine, lavender and lemon essence are also used.

Rust Spots. On white goods the spots are moistened with clear water and then covered with a little powdered oxalic acid, which is rubbed into the fabric for eight or ten minutes and then washed out carefully. On dyed or printed goods the spots are covered with cream of tartar which is rubbed into the fabric for about ten minutes and then washed in clear water.

Blood. Washing with water is usually enough to remove these spots.

Perspiration. If the spots are of recent origin a rinsing with ammonia is usually sufficient. If the spots have been on the goods for some time they are treated with oxalic acid and then rinsed in water.

Soot. Saturate with turpentine and rub lightly, then apply egg yolk diluted with tur-

pentine and rub a second time. This process is repeated until the spot has disappeared. If there remains a stain due to traces of iron it is removed with cream of tartar or oxalic acid.

Tallow. The same process as for grease spots.

Tobacco. The same process as for fruit stains.

Varnish. The same process as for paint spots.

Wine. The same process as for fruit stains. Spots caused by red wine are first washed with white wine, which removes most of the coloring matter.

Brass. The oxidation of brass causes spots which are removed with the aid of lard or rancid butter.

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MILL EXPERIENCES

Under this head we will publish from time to time stories from practical mill men, telling of vexatious and unusual difficulties which have occurred in different branches of mill work, and how they have overcome them. We invite mill men to send us an account of such experiences. We pay, of course, for all that we use. Facts told just as you would tell the story to a friend are what we want, not fancy writing.

THAT FIRST OVERSEER'S POSITION

BY COLFAX

(Continued from November.)

But at the same time I was not patting myself on the back as having accomplished anything very wonderful, as I knew full well that what had been done was simply the result of a mixture made up of a moderate knowledge of carding, a little common sense and a whole lot of hustle and hard work.

Up to this time I had not uttered a single word in the way of criticism of either the equipment or the methods of doing things, but had simply plugged along in my own way with what was at hand to do with, and while continuing along this line I now began planning to try out some ideas of my own that would tend to improve the work and the appearance of the card-room and at the same time reduce the labor costs.

The leading feature of my ideas, of course, was to introduce the Apperly feeds and do away with the creels on the finishers, and after going into this subject fully with the management, pointing out to the best of my ability the many advantages of the Apperly over the creels, they finally agreed to try one set and see how it worked. They were not, however, very enthusiastic over doing this, as they had at various times talked over this matter with the other carder and he seemed to strongly prefer the creel system, and his arguments in favor of the creels seemed very convincing to them.

However, they were willing to give me a chance to prove my theory correct, and then the question arose as to which style of finished we had better change over. As before stated, four of the 48-inch finishers were turning off but 40 ends, and after a great deal of debating it was finally decided to put 60 rings on one of these finishers and run off three spools and to use this for our finest work.

So the order was placed for a feed, also for the new rings, and it was arranged that an expert should come from the machine builders to set up the new feed. I had never up to this time had an opportunity to put on a set of rings, although I had seen it done several times. I, however, got busy and marked out a ring board for 60 good rings and in the course of ten days the new rings arrived and I went to work placing them on the doffers, setting them to my ring board and had them all packed and nicely ground and smoothed up when the feed arrived with the expert to set it up.

After he had examined the rings as to being properly spaced and pronounced everything all right, it was not long before we had this card ready to start, as I had put the cylinder and top work into good condition while the rings were being packed. It took us probably two full days before everything was running satisfactorily and the expert left, although it required a constant watching and nursing on my part for another week before that confounded three-spool arrangement was working entirely right.

The results from this card were so entirely satisfactory that inside of a month the order was placed for feeds for the remaining six finishers, as it would be necessary to keep one creel in order to handle the several styles of novelty yarns we were making. It was also decided to increase the spinning capacity by adding four new mules and with the topsy-turvy conditions incident to making this improvement there was plenty of action for everybody for at least six weeks.

Then as things began to swing along in order, a very decided improvement was noticeable both in the character and quality of the work turned off, and in the neat and tidy appearance of the room. Of course as fast as the new feeds were attached, I went carefully and thoroughly through the whole set and put everything in as good shape as possible, although I did not ask for a bit of new clothing, despite the fact that there were places here and there where I could justly claim that new wire was necessary.

I might have had new clothing for the asking, but in looking through the dark corners that exist in many mills, I had located a number of old doffers, workers, etc., that came in very handy, and while a little patience was required to properly match them sometimes, I recovered several tumblers, workers and strippers from this discarded clothing that gave me results that repaid me for the trouble and at the same time saved to my employes quite a sum of money.

It was during this busy time of putting on Apperly feeds and new spinning machinery that I found $21.00 in my envelope one pay day and upon looking up the date I found that I had been there just three months and that they had not forgotten what they had said to me earlier.

It was also at this time that I experienced my first real trying experience and which was brought about through a lace parting in a stripper belt on one of my newly equipped three-spool finishers. At different times in my experience as second hand I had witnessed smash-ups of various kinds and during my career as overseer I have had them occasionally, but it seems to me that the havoc wrought by that stripper belt was the worst of all.

For one brief instant, as I heard that crashing, tearing and ripping, followed by the screeching of the driving belt, I was seemingly paralyzed, and as I viewed the wreck I was satisfied that all that was coming to me in this line had arrived. Naturally the jar and noise of the smash penetrated to the rooms below and above the card-room and in a few moments quite a few had gathered to inspect the wreck, including the agent and superintendent.

The latter, on hearing what had caused the trouble, became somewhat excited and in the presence of the agent began to preach about the rule he had made about tight belts and called my second hand over and inquired of the latter if he had told me of such rule and continuing with a great deal of warmth to tell of the very high cost of card clothing and what a terribly expensive result this was of our ignoring the rule he had made.

Now after the first sickening shock of the smash I became fully alive to what was ahead and although the machine seemed to be a wreck I saw, after a brief examination, that probably with a little time and patience we might pull out all right, so without denying to the superintendent his right to criticise under the circumstances, I explained to him that the second hand had advised me of some such rule, but that I felt that it was not a good one, and that I alone was responsible for the condition of the belt, and that I would endeavor to work out of the mess with as little expense for new clothing as possible.

He left me with instructions to give him the measurements for rings and whatever other clothing was needed so that they could get the order in at once. Being left alone with my troubles I began to outline my plans. The first question was to try and keep the spinning-room from losing production on account of this card being out of commission, and as fortunately there were two sets of the three-spool style on this work, I first arranged to speed up the other finishers a little and try to keep the spinning going.

(To be continued.)

Correspondence and Notes

UPON TEXTILE TOPICS AT HOME AND ABROAD

ENGLISH NOTES

By Our Special Correspondent

The worsted industry is recovering from the fright into which yarn-merchants, and in a less degree topmakers, had fallen. The cotton industry is on greatly improved terms with itself in view of the probable supplies and the margins obtainable by spinners. The cotton weaving branch is growing by the building of new sheds and the purchase of looms. The carded woolen trade is at its best in Scotland and in the heavy woolen district of Yorkshire, where there is still a large consumption of American rags. America has the silk noil market to itself and the $95,000 worth shipped during October in anticipation of Nov. 18 have cleared out stocks thoroughly. Producers of tussah silk noils exact an advance on the highest rates yet paid and cannot deliver before spring. Brokers and others who wish to see wool advance in price refer continually to a prospect of a revived American demand, but operations on American account amount to very little.

* * *

The newest use found for woolen material is one of the most curious purposes to which wool has ever been put. In Dewsbury they are using it for roadmaking in company with tar and macadam. Flocks and sweepings from the shoddy mills are laid down to form a foundation, tarred chippings are spread over them and a coat of broken granite is rolled down into the mass. The advantage of the use of flocks will perhaps appear later and now that a beginning has been made some road-engineer may be tempted to try the use of waste shoddy on the top of road surfaces that have been sprayed with tar. Fibrous matter ought not to be inferior to non-fibrous dust in knitting the surface and preventing tar from sticking to tires and boot-heels. The details may be left with the roadmakers who will find droppings too poor for carding and too dirty for stuffing wherever low rags are pulled on a large scale. This residue has a manurial value, especially for hop-growing, but it commands no more than a nominal price.

* * *

The mohair and luster lining and dress goods business, so much under American discussion, is (or was) the traditional Bradford trade. "Bradford goods" meant bright cotton warp stuffs practically up to the McKinley year, since when Bradford has found occasion greatly to diversify its productions. Manufacturers thought of nothing else than luster stuffs which they wove on light, narrow looms to exceeding great profit in the seventies, Continental competition being paralyzed by the Franco-Prussian war. Those who stood by their narrow looms were losing money and failing one after another in the eighties when the tide finally deserted them. Owners of broad looms were doing better at that time, as the following passage from a speech in 1909 will denote:

"Prior to the McKinley Tariff my firm sold in one particular cloth $450,000 in America. The duty was 50 per cent. Now we sell $50,000 and as low as $25,000 simply because the duty is 120 per cent. on the same cloth. With the duty back at 50 per cent. we could be selling double $450,000." Thus Tom Mitchell, of Mitchell Brothers, Bradford, who run 20,000 to 30,000 spindles and 400 to 500 looms. The small fry of thirty years ago have disappeared and not one of the old firms but has met with fluctuating fortunes. Salt's of Saltaire & Foster's of Denholme have both been reconstructed. Foster's of Queensbury, with their large resources and fortunate deals in raw material, have escaped mishap. The capital is private in nearly all cases, but the records of three companies can be traced. Bottomley's of Buttershaw, who spin and run some 200 looms, have paid on an aver-

age 3 1/4 per cent. on their $400,000 of ordinary stock during the last decade, and 6 per cent. on a similar weight of preferred shares, attaining this result with difficulty. Cawthra's of Bradford, who weave only and have over a thousand looms, have paid 6 per cent. on their $300,000 of preferred stock and about 7 1/4 on an equal amount of common in the last ten years. Fison's of Burley in four years have paid 5 per cent. on $600,000 and 5 1/2 per cent. on $750,000. There are other concerns of from 400 to 800 looms, principally making mohair linings and dress goods, which have palpably had very bad years as well as very good ones, although there are no published accounts. Constancy has not been this trade's feature in English experience.

Luster English and crossbred, mohair and alpaca spinning and weaving are still a large part of the Bradford industry, but even before the nineties Bradford was going extensively into worsted clays and screws. During that decade sprung up the trade in cheap worsted fancies. Dress serges became a larger item, the botany dress and lining trade increased and Bradford found it could weave cotton linings for mercerization to imitate those with worsted filling. All the while the export market called for bright, cheap fancy stuffs with figures and checks. Then in the nineteen hundred the gabardine business rose, the better coating trade was cultivated and manufacturers aimed at the French style of wool dress goods. In the nineteentens the newcomer has been artificial silk, business in which is always extending. The effect of the successive checks and changes administered by the foreign tariffs, fashions and clothing trade developments has been the stated one of greatly diversifying Bradford goods and reducing the bright-wool business to the status of a department.

* * *

The complaint that middlemen's charges are too high in the textile distributing business has its echoes on this side, where wholesale clothiers have more to say on the subject than cloth manufacturers. A London clothier making a popular overcoat for $3.30 wholesale sees his goods in the shop-windows marked at all prices between $4.50 and $12. The price varies with the class and location of the shop and the manufacturer thinking of how many more garments he would sell if they were all retailed at $4.50 to $5 condemns the distributive system as crazy and rotten. Still he cannot urge that even those who charge most for his productions are making exorbitantly large net returns. Their swollen gross profits go in rent, taxes and wages and in the long run he has to admit that the money goes into the pockets of those who are neither manufacturers, clothiers nor retailers. When the clothier becomes his own retailer and opens branch shops some originally cheap things are sold exorbitantly dear. Whether a woman pays ten, fifteen or twenty dollars for a mantle depends very much on the salesman's idea of her ability to pay and on whether the article looks out of the common and whether she buys it early or late.

* * *

The spread of education in England has not tended to make mill work more popular as an employment and worsted spinners have serious cause to fear the abolition of the system of half-time working. If that is done away with and the school age raised to 13 and then to 14, as proposed, the prevailing difficulty of finding juvenile labor can only be aggravated. The supply will be directly restricted and indirectly a larger number of young people will acquire a distaste for the mill and a tendency to look on it as a low-caste employment. We have not outgrown those false distinctions as yet and on the whole manufacturers have not done much to extinguish them by making the mill attractive in comfort and appearance. Nor have spinners taken at all extensively to the mechanical doffers which would reduce their need of juvenile help. The makers of doffers have orders in front of them that will take years to execute, but they are for American, Canadian and Continental mills; mills where labor is dearer than here and where it is cheaper than here, not as yet for conservative England.

An architect reminded the Bradford Textile Society that the first desideratum in considering sites for new mills is the availability for help. To get help in regular supply you must be near a town large enough to furnish amusements and this implies a substantial rent. The worsted expansion of the last thirty years has been met with very little building, but the growth of the future will require new mills. The shortage of help may cause the traditional worsted area to be extended. Indeed one spinning mill is already being placed in Doncaster where the opening of a coal-field finds work for men and the profits of a race-course almost do away with local taxation. The existing Yorkshire mills are substantial stone structures, largely with wooden beams. Stone, steel and concrete will be the natural materials in future and as to cost Mr. Moore speaks of premises with fireproof floors and steel and glass roofing at $4.80 to $8.40 per superficial yard, according to the department for which the building is wanted. Combing, weaving and dyeing are done chiefly in sawtooth sheds, spinning and warehousing in storied premises.

* * *

An English factory inspector has been at pains to make micro-photographs of samples of dust taken from cotton cardrooms while the process of card-stripping was going on. The magnification showed particles of cotton husks, weeds, sand, grit, flint and specks of metallic substances. The samples were from rooms ventilated by exhaust fans, which in the official eye are not satisfactory because they do not gather the dust at the point of origin. Three mill companies were fined on the strength of the evidence submitted, although one manager was able to plead that an approved extractor was in the mill. Its use involved extra work for which the men wanted extra payment and for want of an agreement as to terms the appliance stood idle. No doubt others than the inspectors will begin to interest themselves in enlarged photographs of mill dirt.

* * *

The departure of Arno Schmidt, secretary of the International Federation of Cotton Spinners for Egypt and India, is connected, of course, with cotton growing questions. A tour of Egypt similar to the tour of the United States in 1906 by the "Lancashire private cotton investigation committee" is to be made next year and Mr. Schmidt is arranging details. Whether the trip will include the Soudan and whether it has any bearing on land purchases in the Nile valley may appear later. Mr. Schmidt has been to India previously and on his solicitation some Bombay millowners joined the International. But it is a fair inference that the second visit is not unconnected with Government business. The Indian Government wants European help in its cotton-growing schemes and the old diffidence about helping to grow cotton not suitable especially for Lancashire machinery is less evident than in past times. The defective system of marketing which gives the peasant cultivator as bad a price for good staple as for inferior will certainly be reported upon.

A HAND BOOK OF WEAVES

By G. H. OELSNER, Director of the Weaving School at Werdau.

(Translated and Revised by Samuel S. Dale.)

(This series of articles began in July, 1911.)

STEEP TWILLS

A peculiar form of twill, known as a steep twill, is obtained when the warp float of each thread rises two or more picks instead of one pick above the float of the preceding thread. A steep twill can be made by drafting in succession the alternate threads of a regular twill. For example, Fig. 301 shows a steep twill obtained by drafting successively threads 1, 3, 5, 7 and 9 of the 10-leaf twill, Fig. 300. This is equivalent to removing every other thread of the regular twill.

Raising the warp float two threads higher at each warp thread brings the twill line nearer the perpendicular. On the other hand, if the filling floats are set two or more threads to the right or left at each pick, the twill line is brought nearer to the horizontal, forming what is styled a flat twill. The steep twill is the more popular form.

(Copyright, 1911, by Samuel S. Dale.)

In steep twills the twill is narrower and usually less distinct than in regular twills. In some cases, owing to the shorter filling float, the warp twill is more prominent than in regular twills.

If a regular twill having an even number of shafts, say 10, 12, 14, 16, etc., is selected for the construction of a steep twill, only one-half of the threads are used, and consequently, but one-half as many shafts are needed for the steep twill weave.

If, however, the regular twill has an uneven number of shafts, the resulting steep twill will have the same number of threads or shafts in the patterns as there are in the ground weave.

Figs. 302 to 362 show a number of different forms of steep twills:

Fig. 302 ..... 7 shaft
Fig. 303 ..... 9 shaft
Fig. 304 ..... 11 shaft
Fig. 305 ..... 11 shaft
Fig. 306 ..... 12 shaft
Fig. 307 ..... 13 shaft

FIG. 300.

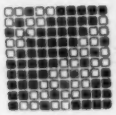
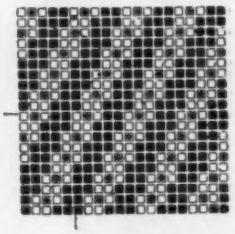


FIG. 301.



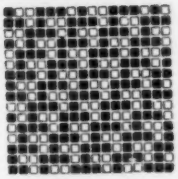


FIG. 302.

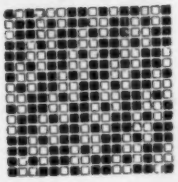


FIG. 303.

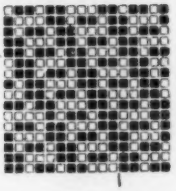


FIG. 304.

FIG. 305.

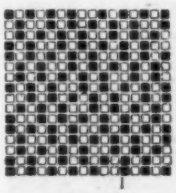


FIG 306.

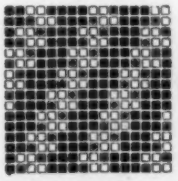
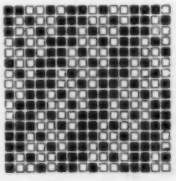


FIG 307.



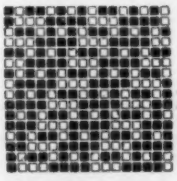


FIG. 308.

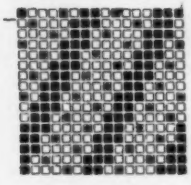


FIG. 309.

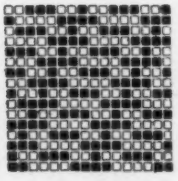


FIG 310.

FIG. 311.

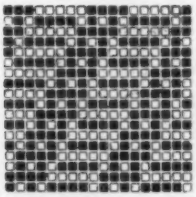


FIG. 312.

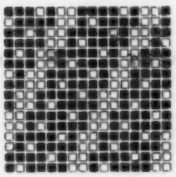
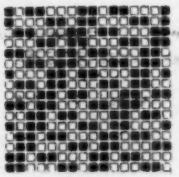
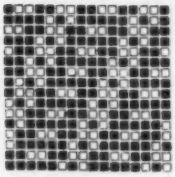
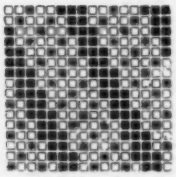


FIG. 313.







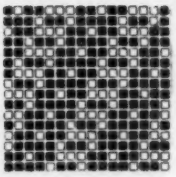
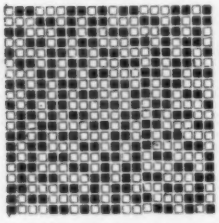
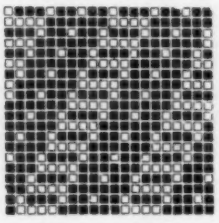


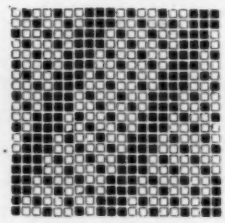
FIG. 314.
FIG. 317.

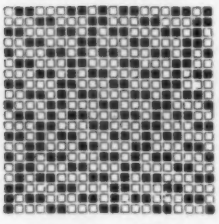
FIG. 315.
FIG. 318.

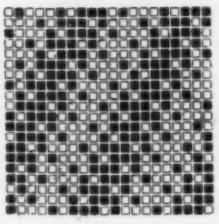
FIG. 316.
FIG. 319.











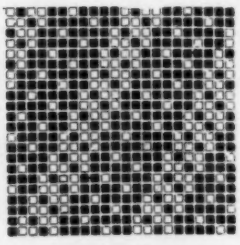
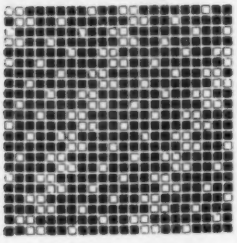


FIG. 320.

FIG. 321.

FIG. 322.



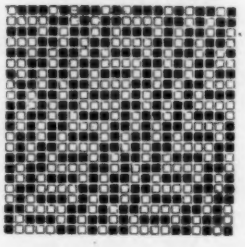


FIG 323.

FIG. 324.

Fig. 308 ..... 14 shaft
Fig. 309 ..... 15 shaft
Fig. 310 ..... 16 shaft

Fig. 317 ..... 10 shaft x 20 picks
Fig. 318 ..... 10 shaft x 20 picks
Fig. 319 ..... 10 shaft x 20 picks

FIG. 325. FIG. 326. FIG. 327. FIG. 328.

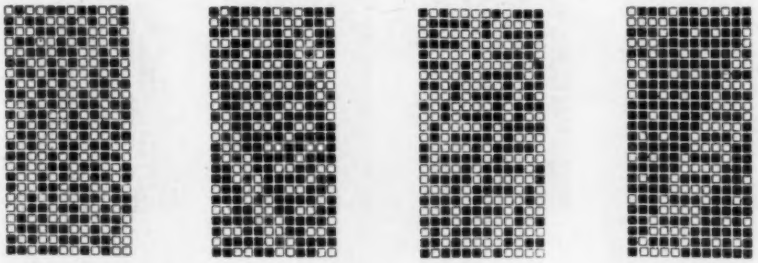


FIG. 329. FIG. 330. FIG. 331. FIG. 332.

Fig. 311 ..... 16 shaft
Fig. 312 ..... 16 shaft
Fig. 313 ..... 16 shaft

Fig. 320 ..... 10 shaft x 20 picks
Fig. 321 ..... 10 shaft x 20 picks
Fig. 322 ..... 11 shaft x 22 picks

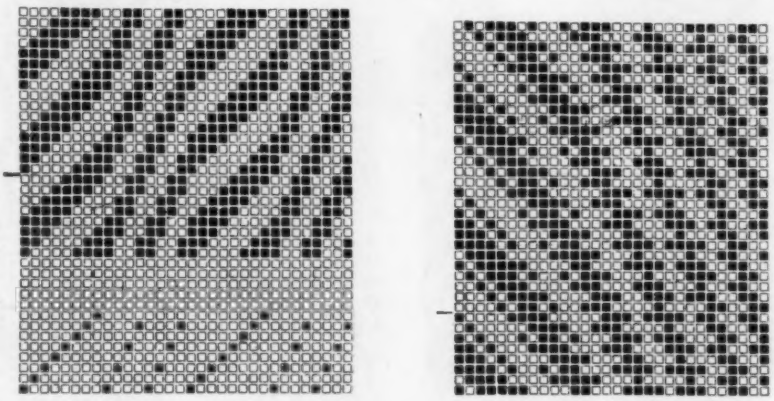


FIG. 363. FIG. 364.

Fig. 314 ..... 16 shaft
Fig. 315 ..... 16 shaft
Fig. 316 ..... 18 shaft

Fig. 323 ..... 11 shaft x 22 picks
Fig. 324 ..... 11 shaft x 22 picks
Fig. 325 ..... 12 shaft x 24 picks

FIG. 333.

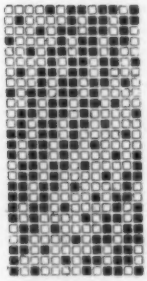


FIG. 334.

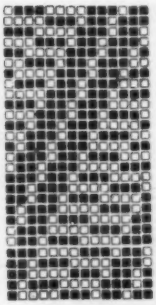


FIG. 335.

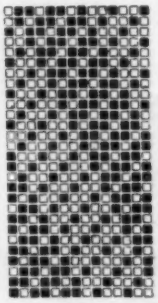
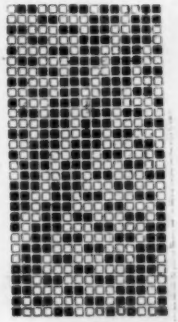


FIG. 336.



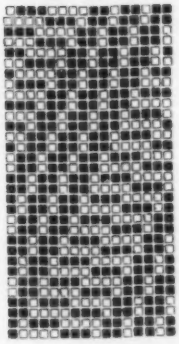


FIG. 337.

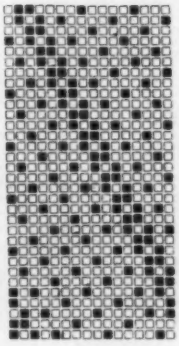


FIG. 338.

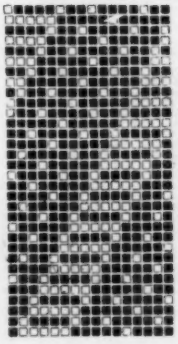


FIG. 339.

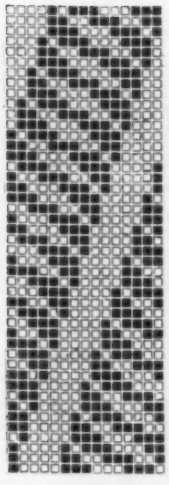


FIG. 359.

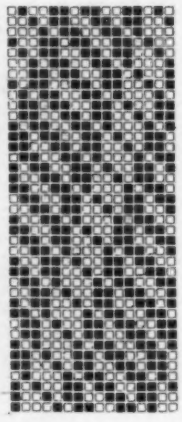


FIG. 360.

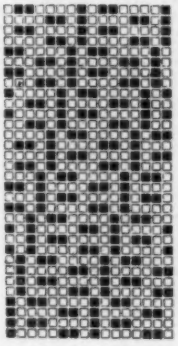


FIG. 361.

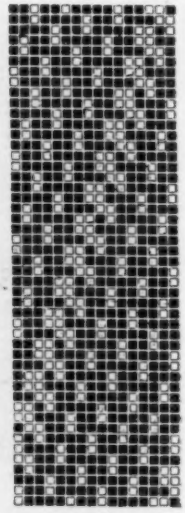


FIG. 362.

Fig. 326 ..... 12 shaft x 24 picks
Fig. 327 ..... 12 shaft x 24 picks
Fig. 328 ..... 12 shaft x 24 picks
Fig. 329 ..... 12 shaft x 24 picks
Fig. 330 ..... 12 shaft x 24 picks
Fig. 331 ..... 12 shaft x 24 picks
Fig. 332 ..... 13 shaft x 26 picks
Fig. 345 ..... 18 shaft x 36 picks
Fig. 346 ..... 20 shaft x 40 picks
Fig. 347 ..... 23 shaft diagonal rib
Fig. 348 ..... 20 shaft x 40 picks
Fig. 349 ..... 24 shaft x 48 picks
Fig. 350 ..... 24 shaft x 48 picks
Fig. 351 ..... 24 shaft x 48 picks

FIG 340. FIG. 341. FIG. 342.

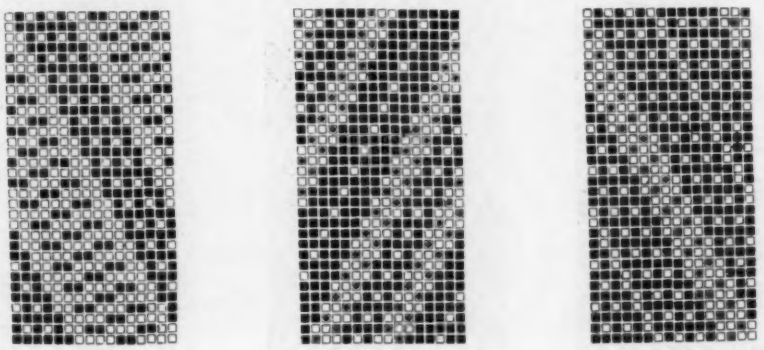


FIG. 343. FIG. 344. FIG. 345.

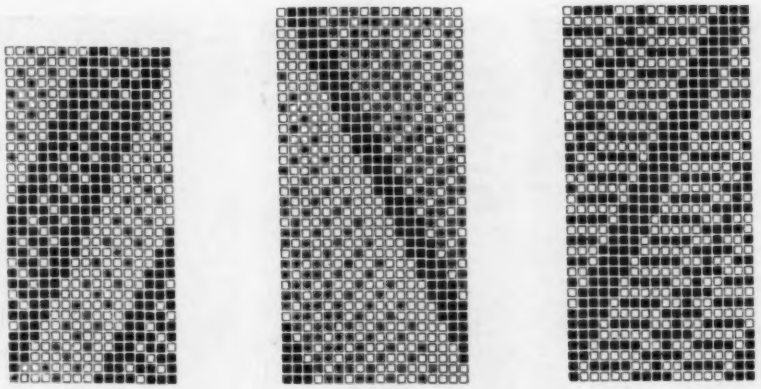


Fig. 333 ..... 13 shaft x 26 picks
Fig. 334 ..... 14 shaft x 28 picks
Fig. 335 ..... 14 shaft x 28 picks
Fig. 336 ..... 15 shaft x 30 picks
Fig. 337 ..... 16 shaft x 32 picks
Fig. 338 ..... 16 shaft x 32 picks
Fig. 339 ..... 16 shaft x 32 picks
Fig. 340 ..... 16 shaft x 32 picks
Fig. 341 ..... 16 shaft x 32 picks
Fig. 342 ..... 16 shaft x 32 picks
Fig. 343 ..... 16 shaft x 32 picks
Fig. 344 ..... 18 shaft x 36 picks
Fig. 352 ..... 26 shaft x 52 picks
Fig. 353 ..... 27 shaft x 54 picks

In Figs. 302 to 353 the warp float rises two picks at each thread. These examples show the effects obtained in steep twills made with different ground weaves. These changes should be clearly understood when drafting new diagonals.

The examples given show that in drafting a steep twill with the float rising two picks:

1. Filling ribs are obtained when the warp in the ground twill is stitched plain,

$^{1}—_{1}$, several times in succession, Figs. 310, 316, 318, 324, 328, 339 and 345.

2. The filling ribs are offset when two risers or two sinkers are inserted after the

4. A $^{3}—_{1}$ order gives a plain weave on alternate picks, the intermediate threads floating on the back, Figs. 316, 328, 340, 342 and 348.

FIG 346. FIG. 347. FIG. 348.

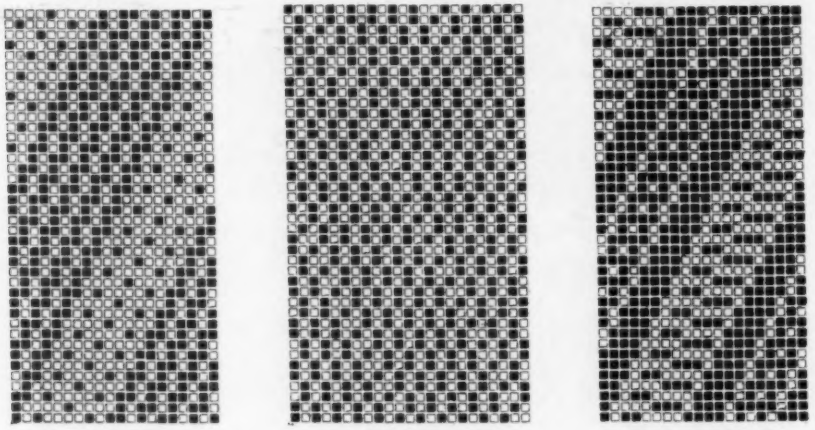


FIG. 349. FIG. 350. FIG. 351.

plain stitchers, Figs. 334, 337, 348, 349, 350 and 352.

3. A 45° (normal twill) running in the reverse direction is obtained by interlacing the warp in $^{2}—_{1}$ or $^{1}—_{2}$ order, Figs. 307, 312, 319, 322, 325, 329, 330, 332, 335, 343 and 344.

5. A $^{4}—_{1}$ order results in a 5-shaft satin, Figs. 311, 315, 321, 322, 323, 338, 339, 352 and 353.

6. From a $^{3}—_{2}$ order is obtained a 5-shaft double warp satin, Figs. 317, 324 and 346.

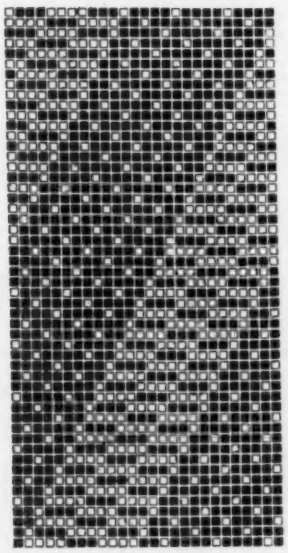


FIG. 352.

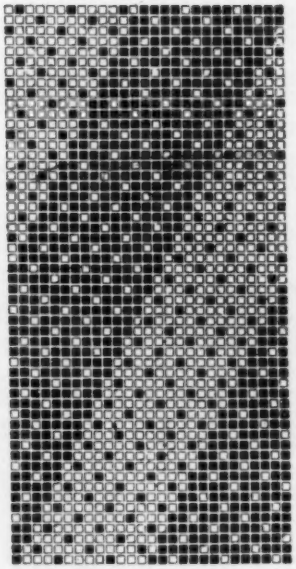
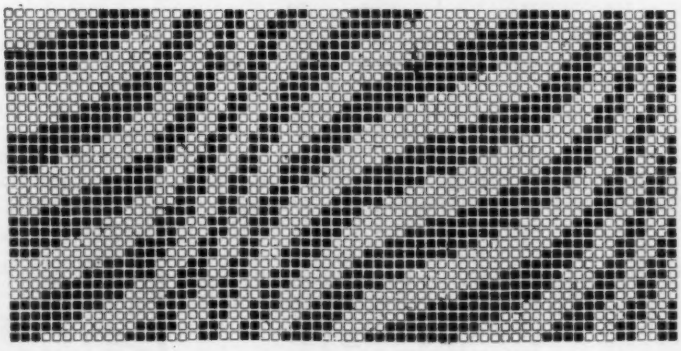


FIG. 353.

FIG. 365.



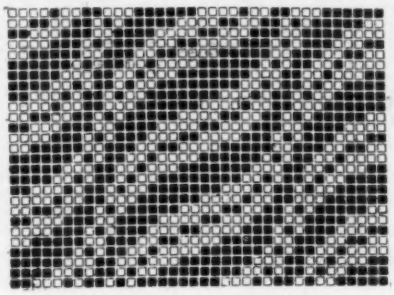


FIG. 366.

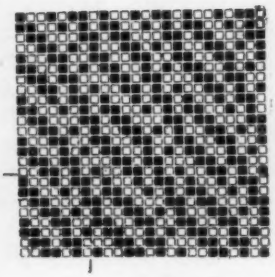


FIG. 367.

7. From a $^{1}\!-\!_{1}\!-\!^{1}\!-\!_{2}$ order is derived a 5-shaft double filling satin, Figs. 314, 317, 320, 336 and 340.

8. A $^{5}\!-\!_{1}$ order gives a 3-shaft twill on alternate picks, the intermediate threads floating on the back, Figs. 318 and 351.

In Figs. 354 to 362 the warp float rises either three or four picks at each thread.

FIG. 354.

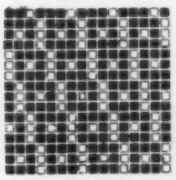
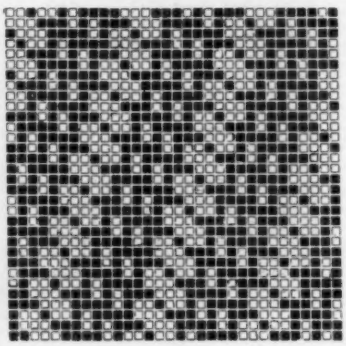
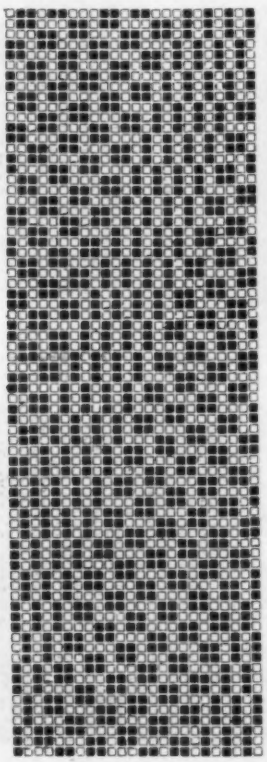


FIG. 356.





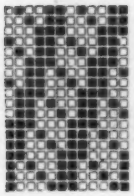


FIG. 357.

FIG. 355.

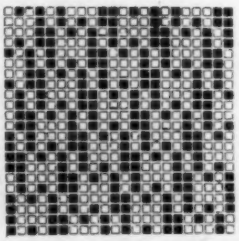


FIG. 358.

Fig. 354	.....	4 shaft	x 12 picks
Fig. 355	.....	24 shaft	x 72 picks
Fig. 356	.....	32 shaft	x 32 picks
Fig. 357	.....	6 shaft	x 18 picks
Fig. 358	.....	11 shaft	x 22 picks
Fig. 359	.....	15 shaft	x 45 picks
Fig. 360	.....	13 shaft	x 39 picks
Fig. 361	.....	8 shaft	x 32 picks
Fig. 362	.....	16 shaft	x 48 picks

(To be continued.)

PLAN OF A COTTON WEAVING MILL

FROM UHLANDS TECHNISCHE RUNDSCHAU

Translated from the German by the Editor of the Textile World Record.

The accompanying drawings show the plan of a weaving mill prepared by a Swiss engineering firm. It is so arranged as to be readily extended at one end. The weave room at first is to accommodate 234 looms and the accessory departments are equipped to provide for a mill of that size. Four looms are placed in each bay, the arrangement being shown in the plan of the room, W. There are seven alleyways running across the room and three lengthways of the room. Two of the alleyways are over 6 ft. 6 in. wide and the others are each not less than 4 ft. 7 in. wide, giving easy access to all

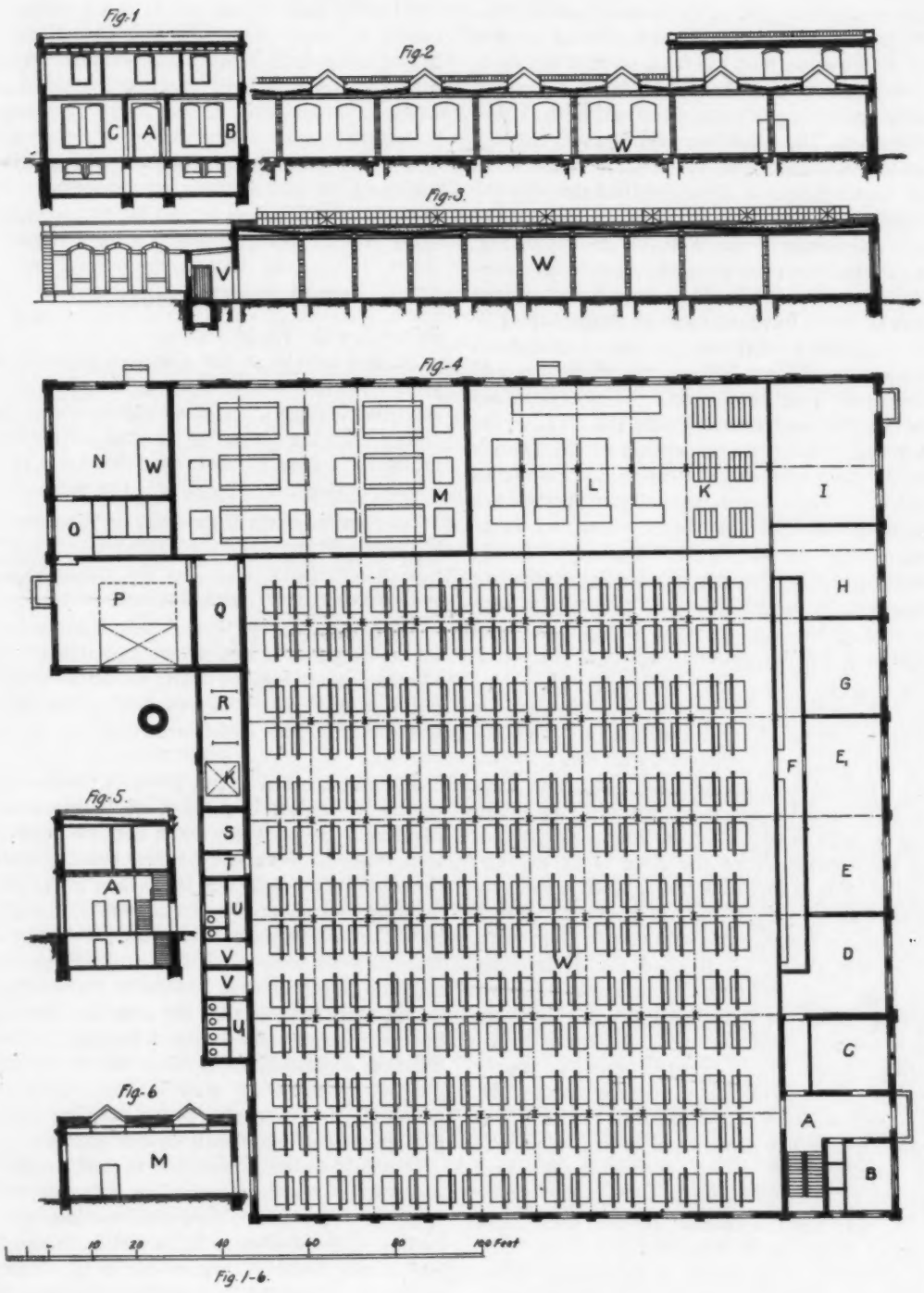


Fig-1
C
A
B
Fig-2
W
Fig-3.
V
W
Fig-4
N
W
O
M
L
K
I
H
G
F
E
D
C
A
B
P
Q
R
K
S
T
U
V
V
U
W
Fig-5.
A
Fig-6
M
10
20
40
60
80
100 Feet

Fig. 1-6.

parts of the room. The room is 126 ft. wide by 153 ft. 6 in. long, the bays being divided as follows: 14 ft. 9 in., four 12 ft. 9 in., 14 ft. 9 in., two 12 ft. 9 in. and 19 ft. in one direction and six 23 ft. and 15 ft. 9 in. in the other direction. There are nine windows in the end of the mill each 4 ft. 11 in. wide and 6 ft. 10 in. high. Light is also admitted through the windows in the roof, as shown in Figs. 2 and 3. The pitch of the roof, as shown at Fig. 2, allows the rain water to run to the conduits at the side. The iron posts in the weave room have an average length of 14 ft. 9 in. They rest on cement foundations under the floor. Where the girders would ordinarily rest on the wall the posts are set in the masonry so as to take the strain from the wall. With the exception of the 15-inch walls, the outer walls of the mill are 8 inches thick. The accessory departments are grouped around the weave room so as to leave only one end of the latter exposed. At the right, in the corner, is the two-story counting house, Figs. 1, 2, 3, 4 and 5, separated from the mill by a 15-inch wall. There is a cellar under this part of the building.

The corridor, A, leads to the stairway, the private office, B, and the central office, C. The room, D, is connected with this corridor by a passageway as shown. The upper floor is also used for office purposes. This building is 24 ft. wide and 43 ft. long. The height of the ceiling above the floor is as follows: Cellar, 8 ft. 2 in.; first floor, 14 ft. 9 in.; second floor, 10 ft. 6 in. Next to the office building is a series of rooms 23 ft. 6 in. wide. The first room, D, is used for a packing, storage and shipping room, two windows giving plenty of light. Adjoining this room is a storage room for cloth, E, and a measuring room, E'. Next comes a supply room, G, and a yarn storage room, H. Doors lead from the yarn room to the weave room and to the drawing-in room, K, as well as to the room, G. Large windows admit plenty of light to all of these rooms.

A wardrobe extends across these five rooms, being 92 ft. long and 5 ft. 9 in. wide. Next to the yarn room is the dining room, I, which can be reached only by going to the yard and entering by the outside door. At the farther end of the mill is the drawing-in room, K, warp room, L, and sizing room, M. Doors lead from these rooms to the weave room and light is admitted by large windows at the end of the mill. There are no posts in the sizing room, M, the roof being separated by four heavy girders. The room, Q, is used for mixing the sizing. At the left of the sizing room, M, is the repair shop, N, the room, O, being a bath room.

DIFFERENTIAL MOTIONS

Editor Textile World Record:

In the article in the October number of your "Textile World Record," headed "Differential Motions," it does not seem to the writer that the "purpose" of the differential motion on flyer frames, as defined by your correspondent, is very clear. He writes:

> The purpose of the Differential or "Compound" is to take motion from the main shaft at a constant speed and combine with it the motion derived from the bottom cone at a varying speed and deliver it to the bobbin as one speed.

While the above, though not incorrect as far as it goes, is not very explicit and can hardly pass as a good definition of the differential motion, as it fails to hint at the most important feature and primary object of this motion.

The name given to this piece of mechanism on flyer frames, i. e., that of "Differential Motion," has probably been applied because it permits of a variable speed being passed through it, though it is perhaps a little misleading and that of relieving motion might be more appropriate. Its principal object is in reality to reduce, as far as possible, the amount of power that has to be transmitted by the cone belt, so that the cone drums may be more accurately enabled to control the winding of the bobbins, and this it accomplishes by throwing most of the strain or power required to drive the bobbins upon the main or driving shaft of the machine.

It would be quite possible to build a roving frame of only a very few spindles and dispense with the differential motion altogether and yet obtain fairly accurate winding of the bobbins, which could be driven positively from the bottom or driven cone drum shaft, as it is, of course, the cone

drums which give the varying speed to the bobbins (but in this case the cones would be better made of larger diameter, and the taper or variation in their diameter would necessarily be very slight). It will, however, be obvious to any mechanical mind that it is quite impossible for a leather belt running over two cones of comparatively small diameter, to drive 100 or more bobbins on a roving frame at a high speed without a great deal of slippage taking place, if it could be done at all. The varying speed is therefore transmitted through the differential or winding motion, which relieves to a very great extent the strain that would otherwise fall upon the cone belt.

In addition to this a change of speed in the bottom or driven cone is proportionately reduced in passing through the differential motion to the bobbins, so that any slight inaccuracy in the speed of the bottom cone which might be caused by the slipping of the cone belt, etc., is less pronounced in the speed of the bobbins. The primary object, however, of the differential, or winding motion as it is sometimes called, is to confer the bulk of the force required to drive the bobbins upon the main or driving shaft of the machine and reduce the work of the cone belt to a minimum.

This is a matter of great importance, and even now with long flyer frames the cone belt has all it can manage. To further offset any inaccuracy that might be caused by the slippage of the cone belt a very good firm of English machine builders have a patent "Duplex Cone" which they recommend with very long frames, in order to prevent any possibility of straining the roving. It consists simply of two top and bottom cones, the two top cones being on one shaft, and the two bottom cones on the same shaft, each set of cones being driven by a separate belt, the belt guides being connected. By this means two narrow 2-inch cone belts may be used in place of a single 3-inch belt, and greater accuracy of driving, and more power can be transmitted. The Baltic Mills Company, of Baltic, Conn., who are noted for the fine quality of their goods, have this arrangement on all their flyer frames.

As regards the various kinds of differential motions, that shown in Fig. 1 of your article is the old "Holdsworth" or "Sun and Planet" motion, and is now out of date, having been superseded by the one shown in Fig. 2 of the same article, and many others.

Of the modern differential or winding motion the Rhodes Patent Motion, as used on Messrs. Platt Bros.' Frames, is one of the best, as, in addition to being perfectly balanced, and the internal movement reduced to a minimum, the gearing is all spur gearing, and it is also provided with an internal change gear, which, in case of it being necessary to make an extensive change in the diameter of the bobbins on the frame, is very useful.

All of the new motions are, however, a great improvement upon the old "Sun and Planet" Motion, which was the first differential motion brought out.

Differential.

WARPING IN RELATION TO SLASHER WASTE

BY EGERIA

Many mills find that there is a large amount of waste left on the warper beams when a set runs out on the slasher. The tension weights on the beam heads and the position of the beams in the set have a great deal to do with this waste on account of the variation in the tensions on the different beams. For example, the last beam in the set will have more tension on its yarn than the first, as the yarn on the last beam has to pull the beam around against the tension while the first beam is helped along by the yarn from the back beams and thus the strain on the yarn is lessened and consequently less stretch is obtained.

Another thing to consider is the warper with regard to its measuring roll. On some warpers the measuring device is worked from the warper drum. In my opinion this is one reason why the beams have uneven lengths of yarn upon them. We will consider this style of warper when it is ready to start on an empty beam. At this point the spools in the creel are full and as the beam barrel is now resting against the warper drum, the angle of the yarn from the comb

to the beam is the greatest that it will be at any time during the filling of the beam. Thus we see that the beam starts to fill under unfavorable conditions, the warper beam having to pull against the weight of the full spools at such an unfavorable angle.

From this it is seen that there must be a very good contact between the beam barrel and warper drum to maintain friction enough to give a positive drive. This is where the trouble lies. When the warper is started, there is not friction enough and the warper drum slips around quite a little. Thus the clock is registering quite a few yards that are not on the beam. This is espacially noticeable when heavy yarn is being run in the warper. As a remedy for this, a very heavy weight has been put on either end of the beam and while the slipping has been stopped to some extent, still there is quite a little taking place. Again, the heavier weights have added to the power required to drive the warper and when slipping occurs the yarn is injured to a greater or less degree by rubbing under pressure. The measuring is sometimes placed just in front of the warper comb. A light roll on either side tends to maintain enough pressure on the yarn to give good contact on the measuring roll, the register on the clock, and that the slipping on the warper drum will have no effect on the clock. Lighter weights are also placed on the beam ends so that when slipping does occur on the drum the yarn is not injured so badly. The length of yarn on the beams will come out very even and the weighting of these beams in the slasher will determine the amount of waste.

CARBONIZING WOOLEN CLOTH

The object of carbonization is to free wool from accidental contamination with vegetable matter, which may take various forms, such as straw, burrs, or fibers from wrappings. The carbonization may be done at almost any stage of the finishing. It may be the first process of all, before scouring, or it may come after napping, fulling, or dyeing. One advantage of putting this process first is that in this case the wool is protected by the spinning oil and is less likely to be damaged. Nevertheless goods carbonized before scouring never dye so well as those carbonized subsequently and carbonization, therefore, should not be done before scouring, except in the case of thin woolens to be dyed black. Again, it is evidently easier to carbonize unfelted than felted wool, that is, to carbonize before fulling; but there is here, too, a reverse side to the shield. Goods fulled after carbonization take longer fulling and make a great deal more waste. On the whole the best time to carbonize is after napping, which loosens the fiber and enables the carbonizing liquids to penetrate better.

In considering the advisability of carbonizing after dyeing, the nature of the dye must naturally be a determining factor. The liquids used act on many dyes. Again, it must not be forgotten that carbonization makes for level dyeing, by making the constitution of the fabric more homogeneous.

Carbonization is done with sulphuric or hydrochloric acid, or a mixture of the two, and also in the case of wool-yarn-dyed goods with chloride of aluminium or magnesium. The goods are steeped in acid by means of a jigger, the vat of which is of glass or cement, or of wood lined with lead. In any case it must be free from alkali or soap, which would destroy part of the acid. The acid is used from 5° to 9° Tw., and care must be taken to work the goods through it till they are thoroughly soaked. They are then drained and centrifuged. Great pains must be taken to keep the goods from light, especially the direct rays of the sun, while they are awaiting drying, and while they are drying. The scouring and drying should be done in rooms with ground-glass windows and as dark as is compatible with proper work. There seems little doubt that the actinic rays produce peroxide of hydrogen from the acid as long as it is in contact with animal fiber. At all events, the scoured fabric will not dye evenly if it has been exposed to much light. Heat also must be avoided, so that the goods should be covered up if they have to wait. Again, they should not be hung up, and, if piled, the pile should be turned upside down frequently. The object of these precautions is to prevent acid accumulating by gravitation in parts of the fab-

ric, while it not only tenders the goods but makes those places dye differently from the rest.

From what has just been said it is evident that a vast amount of trouble and danger is saved by taking the goods direct from the centrifugal to the drying room to undergo the second and final stage of the carbonization. If the drying is done in a drying room all accumulation of acid in places must also be avoided. Where the goods turn to cross the drying room from one side to the other, they should be bent at a right angle and not at an acute angle. If there are any sharp creases the acid will be unable to evaporate in these places and will act more there than elsewhere. It is obvious, too, that the goods should cross the room horizontally and not hang vertically from ceiling to floor.

The temperatures used are 100° to 120° F. at first and 140° to 170° F. towards the last if sulphuric acid has been used. With aluminium chloride we begin with 100° to 120° and gradually raise the heat to the boiling point. The time in the drying room varies from three to six hours, according to the weight of the goods and the amount of vegetable fiber to be destroyed. The room must be thoroughly ventilated to get rid of the vapors as fast as they are produced. Cylinder drying machines are often used, but the drying room is on the whole better, as the drying machine hardens and stiffens the goods.

The goods are next rinsed to free them from remaining acid. In a properly managed factory this can be done as soon as the drying is over. If unfortunately the goods must wait for neutralization they must be protected from damp and light throughout the interval.

Many processes have been proposed for carbonization. It has been suggested that metallic salts should be added to the acid bath, the advantage supposed to be gained being that they protect the wool from the acid. This addition is, however, quite superfluous, and if the process is properly carried out—if the acid is neither too strong nor too weak, the drying neither too hot nor too long and the rinsing thorough—the wool is increased in strength and requires no protection of any kind. The sulphates of zinc and alumina have been specially recommended for this purpose. All have the great disadvantage that they are apt to leave behind insoluble matter, which makes proper milling or dyeing practically impossible.

The rinsing is done first with clean water, and then with carbonate of soda solution of 4° to 10° Tw. The goods should be lifted when the soda is put in, as if the strong solution touches the goods it will produce soda stains. Aluminium chloride is used in the form of a solution of 9° to 10° Tw. in strength. After impregnation the fabric is centrifuged and dried first for some hours at 120° F. and finally at 300° F. Magnesium chloride solution is used at from 7° to 9° Tw. strength. The impregnation lasts about half an hour. The goods are then centrifuged and dried at the same temperature as with aluminium chloride. Hydrochloric acid gas has also been used in the dry state, and at a temperature of about 250° F., for carbonizing fabrics.

It is sometimes necessary to free half-wools from burrs and straws by carbonization. Obviously in this case carbonization by acid cannot be resorted to. Instead of acid, soda water-glass is used. Three baths are used, each of 600 gallons, and made as follows:

1.—Water-glass	30 lbs.
Ammonia	2 lbs.
Soap	2 lbs.
2.—Water-glass	20 lbs.
Ammonia	1 lb.
Soap	2 lbs.

The temperature of each of these two baths is about 120° F. The third bath consists of concentrated water-glass of 28° to 42° Tw., and must not be more than lukewarm.

After leaving the third bath the fabric is dried and then passed between cast-iron rollers to beat out the dust of crushed burls and dried water-glass.

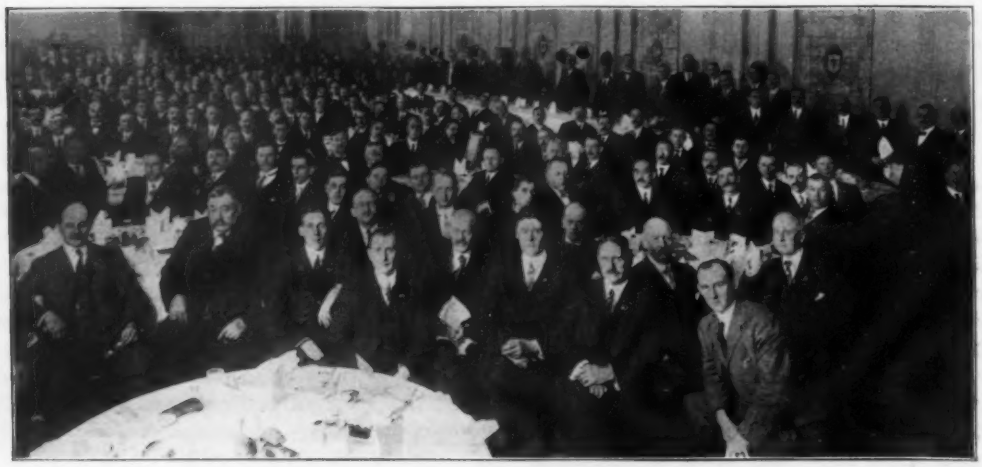
The use of burling tinctures to avoid the necessity for carbonization by dyeing the vegetable fibers to match the wool will be alluded to later, as will that of carbonizing tinctures, which are merely concentrated carbonizing liquids with which the burls of

cotton threads in the fabric are padded. The goods are then dried and brushed.

The carbonizing machines are merely combinations of the three sets of apparatus —the soaking vat, the drying room or cylinders, and the rinsing apparatus.—R. Shawcross in Dyer and Calico Printer.

THE NATIONAL ASSOCIATION OF WOOLEN AND WORSTED OVERSEERS

The twenty-ninth annual meeting of the National Association of Woolen and Worsted Overseers was held at the New American House, Saturday, November 18, 1911, about two hundred members being present.



THE BANQUET OF THE NATIONAL ASSOCIATION OF WOOLEN AND WORSTED OVERSEERS.

President Francis P. Gallagher called the meeting to order at 11 o'clock. The first business in order was the reading by the secretary, Walter Pickford, of the minutes of the previous meeting held in Providence, Saturday, May 20, 1911, which were approved. The treasurer's report as read by the secretary showed a balance of $481, against $251.68, the amount at the previous meeting.

Applications for membership, thirty-nine in all, were accepted and the following were elected:

APPLICATIONS FOR MEMBERSHIP

Thirty-nine new applications for membership were heard read as follows:

Dressers: Ralph E. Chase, Washington, R. I.; Arthur W. Canham, Lowell, Mass.

Spinners: Thomas H. Igo, East Rochester, N. H.; Robert G. Macbride, Hillsboro, N. H.; George Underwood, Lowell, Mass.; A. L. Dunham, Lowell, Mass.; Joseph Ellis, N. Billerica, Mass.

Carders: Lewis A. Daniels, Clifton Heights, Pa.

Combers: Herbert Thompson, Lymansville.

Designers: Albert Rhodes, Fitchburg, Mass.; Albert L. Mabbett, Newport, Me.; George H. Cogswell, Maynard, Mass.

Dyers: John Lawton, Lebanon, N. H.; N. J. Boland, Somersworth, N. H.; Peter Mackinnon, Tilton, N. H.; Edward W. Morgan, Provo, Utah; Lynnwood Greene, East Rochester, N. H.; John Pickles, Lawrence, Mass.; Edward Lawton, North Andover, Mass.; George W. Davis, Lawrence, Mass. Robert Walshaw, Skowhegan, Me.; Louis Demars, Enfield, N. H.; David A. Lopraik, Lowell, Mass.; John E. Ormston, Oldtown, Me.

Sewers: Charles H. Courtney, Maynard, Mass.

Finishers: William J. Brayden, Maynard, Mass.; James P. Ryan, Adams, Mass.; Thomas J. Connelly, Boundbrook, N. J.; James H. Gannon, North Billerica, Mass.

Weavers: Joe Wood, Pascoag, R. I.; Edward D. Doherty, Maynard, Mass.; William G. Smith, Rockville, Conn.; William A. Booth, East Rochester, N. H.; Edward D. Tetley, Sr., Washington, R. I.; B. A. Alexander, Millbury, Mass.; Charles H. Francis, Lowell, Mass.; William Schofield, Providence, R. I.

Superintendent: James H. Redmond, North Billerica, Mass.; John Hinchcliffe, Lymansville, Mass.

Associate Members: Victor H. Beeman, Jersey City, N. J.; Albert Birch, Somerville, Mass.; George L. Hamilton North Andover, Mass.

The report of the trustees was read and accepted.

The committee appointed to make preparations for the banquet reported that the members present would pay 75 cents per

plate while the Association would pay the balance, 50 cents.

The election of officers was then held, with the following result:

For President the candidates were Louis Allison and J. H. Pickford. Louis Allison was elected, receiving 81 votes, while J. H. Pickford received 80.

For first Vice-President, Joseph T. Dolan asked to have his name withdrawn as a candidate. The Secretary then cast one ballot for the other candidate, Richard J. Hill, who was elected first Vice-President.

For second Vice-President Walter Neiber received 75 votes, Wm. C. Hill, 28; Edgar L. Taft was elected third Vice-President; Walter Pickford, Secretary; Thomas Buchan, Treasurer; Henry G. Morey, Secretary of the Beneficiary Dept.; Thomas Buchan, Treasurer of the Beneficiary Dept.; Charles M. Hurst, Louis Carmark and James Wilson, Trustees.

The report of the committee on badges was read and accepted, they having purchased twelve gold badges in neat individual cases with the name of each former President engraved thereon.

Next came the presentation of the badges to the former Presidents: Thomas F. Brennan, Alfred E. Jones, George F. McGuire, J. F. McCormack, Andrew Smith, William E. Davidson, William H. Hassett, Charles M. Hurst, Thomas W. Biddle, George W. Geary, James McDowell and Frances P. Gallagher.

It was voted that a solemn toast be pledged to the memories of the four deceased Presidents in the banquet room before partaking of the dinner.

Before concluding the business of the meeting there was some discussion as to where the next semi-annual meeting would be held, whether at Worcester or at Providence. It was decided to meet in the latter place. Messrs. Hurst, Carmack, McDowell, Amback and Gallagher were chosen a committee to attend to the details.

When the members gathered in the banquet hall, a photograph was taken. The dinner was a very enjoyable affair.

At the conclusion of the meeting resolutions of thanks were passed to those who had extended courtesies and helped make the meeting a success.

THE TRANSMITTING CAPACITIES OF DIFFERENT PULLEYS

At the October meeting of the National Association of Cotton Manufacturers the paper read by Prof. W. M. Sawdon, of Cornell University, on the transmitting capacities of different pulleys, was severely criticised in a reply made by Lawrence Whitcomb, the treasurer of the Cork Insert Co. Prof. Sawdon presented some tests showing comparative results of different kinds of pulleys, including those equipped with cork inserts. As these tests and some statements were so contrary to the results obtained by others in technical tests and in practical use, Mr. Whitcomb in his reply to Prof. Sawdon presented the figures which had just been received in a report of efficiency tests of motor pulleys made in the Lowell Textile School by George H. Perkins, head of the Engineering Department. These tests covered a period of about three months and were made so far as possible under actual working conditions, with the idea of getting the fullest information as to the efficiency and characteristics of the several types of pulleys. In every instance, whether cast iron, wood or paper, the tests showed an increase in efficiency of the corked pulleys over plain pulleys of the same type.

These tests have been printed in pamphlet form, illustrated by diagrams and will be interesting to power users and particularly those who have read Prof. Sawdon's paper. In his reply, which will be published as a part of the transactions of the Association, Mr. Whitcomb points out what he considers the reason for the differences between Prof. Sawdon's tests with the many others which have been made. Those interested may obtain a copy of it and also the efficiency tests from Lawrence Whitcomb, 16 State St., Boston, Mass.

The world's production of silk for 1910 amounted to 54,002,227 pounds.

Questions and Answers

Under this head we undertake to answer, free of charge, to the best of our ability, questions pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

If the question is not of general interest to textile readers and involves expensive investigation, a charge covering the cost may be made, of which the inquirer will be advised before any expense is incurred.

COST OF RUNNING A BLEACHERY

Editor Textile World Record:

Could a bleachery with a capacity of 20,000 yards per day and bleaching 38 1/2 inch 64 by 64 cloth with a back filled finish, be run at a cost of not over 30/100 of a cent per yard? Bleachery to be run at full capacity all the year. Also about how many gallons of water would the above plant use per day? Maximus (1954).

The cost of bleaching and finishing such a small quantity could not be brought down to a 30/100 cent basis. In some cases it might be possible to do this if other goods were available to increase the production. Twenty thousand yards per day would not keep one back filling machine employed. Unless "Maximum" employed experienced labor that could be changed from one machine onto another, the expenses would be very high and it would be impossible to make the bleachery pay. Then there are the fixed charges, insurance, steam and heating to consider. The income from such a plant as "Maximus" desires would amount only to $360 per week at the price he suggests. This amount would not go far when the working of the plant is considered. The goods are sewed in the grey room, bleached, mangled and dried, probably they could be back filled without drying according to the finish required, back filled, dried, sprinkled or dampened, calendered, stretched, all in the finishing process. Then they are measured, inspected, folded, stamped, packed and shipped. Steam is required for the bleach house, dryers, and for boiling the mixings. There are the drugs for bleaching, the materials for filling, starch, minerals, chalk, oils, soap, blue, etc., and at the present price of materials I fail to see how such a plant would pay. A friend of mine who is superintendent of a large plant in the Middle States, is handling nearly the same line of cloths, 38 1/2 grey, finish 36 1/2, 62 by 64, $4.85 per pound, back filled finish, and he cannot get the cost under 55/100 to 60/100 cent, according to the finish required. He tells me he could not handle them at that price if he had not other work to keep his machines busy and to offset the process of the back filled goods. If "Maximus" has a plant and weaving his own goods he might be able to get somewhere near it, with the gain in length and remnants.

The amount of water required to operate a plant to produce the above quantity of cloth per day, would vary a little according to conditions. Under ordinary conditions and the present system of bleaching, about 40 to 45 thousand gallons per day would be required. This allows for mixing, washing down and bleaching. Dulcimer.

PARAFFINE IN SIZING

Editor Textile World Record:

In our solution for the paste used on the dressers, we have been using tallow, glue, flour and paraffine wax, but of late we have eliminated the wax. The information I would like is what effect does the paraffine have on the warp and does it have any effect on the future stability of the cloth, or in what manner it effects the cloth after it leaves the dresser? Steuben (1959).

My criticism of the mixture used on the dressers is that it is very conducive to mildew, both the flour and glue forming fungus under the least provocation. As for the use of paraffine wax, this is most objectionable in case the bags are bleached, but if they are not bleached the main objection will lie in the paraffine wax forming a scum in the slasher box on standing over night, which scum is very hard to dissolve, being a mixture of paraffine wax, flour and the natural gum and lint of the cotton. The scum is carried onto the slasher cylinders and there sticks, causing endless trouble and breakages. I think if "Steuben" used Sizol A for

light sizing in proportion of 5 pounds to 35 to 40 lbs. of starch, or Sizol L for light and medium sizings, if he is using automatic looms, in the proportion of 7 to 10 lbs. Sizol to 55 to 60 lbs. of starch, he would find no trouble from mildew and no separation in his size box. H. Seydel.

STEAM FOR DYEING DRESS GOODS

Editor Textile World Record:

What is the minimum steam pressure advisable to dye ladies' dress goods even? Can it be as low as 40 lbs.? Is it more advisable to dye with high or low pressure? I always have to contend with the fact that I get too much water with the steam in the dyeing machines, as the engineer opens the steam valve only part way. He states that in England as well as in the Eastern States the mills use only 40 lbs. steam pressure in their dyehouses. Dyer (1960).

The absolute minimum is difficult to state and is relative to particular conditions. There is no doubt that under stress of circumstances thousands of pieces of wool dress goods have been dyed with less than 20 lbs. pressure of steam. Haste, poor fuel, overworked boilers and long steam pipes have been answerable for stranger things. It is not economical from the boiler house point of view to work at low pressure and in the dye house the efforts are most unfortunate. "Priming," loss of concentration, boiling over and uneven dyeing result from too low a pressure. Results not quite as bad follow where too high a pressure is used; if the head is 80 lbs., for instance, incaution in turning on steam results in a violent boiling over. The pressure can certainly be as low as 40 lbs., but does the inquirer refer to pressure at the boiler or at the machine? If he is drawing from the dead end of a long steam pipe it is highly possible that the steam arrives at a much lower pressure than is indicated on the boiler.

The question has been put to two Yorkshire dyers of lifelong experience: "What do you consider the ideal pressure of steam?" One answered 80 lbs. in the boiler, lowered by reducing-value to 40 lbs. in the dye house; the other expressed preference for 120 lbs. reduced to 60 lbs. Both laid emphasis on the desirability of reduction in order to avoid the fluctuations of pressure that are inseparable from direct connection. Both agreed that with an actual 40 lbs., backed by a higher boiler reserve, there should be no difficulty in dyeing evenly. To avoid water with the steam some English dyers superheat the supply by passing pipes through the flue. In some works the water is intercepted by a simple trap; the steam is passed into a chamber at a point somewhat higher than the bottom and passed out at the top, the water remaining behind.

Dye houses are laid out now with a circulating steam system, with a tap at the lowest point where any accumulated water can be drawn off. The steam makes a circuit of the place and returns to the boiler, so that the pressure is equal in all parts and not reduced by condensation as when standing in a long pipe. Even dyeing seems to be promoted by a double steam connection.

When the steam is supplied only from one side of the machine, the hottest water, which deposits its color first, is driven to the further side. When steam is blown in at both sides the action is equalized.

Wessex.

STAINS IN CLOTH

Editor Textile World Record:

In reference to "Fulton's" inquiry regarding stains in cloth, the following might be a few of the causes for this difficulty:

1. A leaky roof in the bleaching house, allowing water to drop on the goods in one spot, which on combining with sulphur forms what is called sulphureous acid and has a tendency to tender the goods and form yellow stains.

2. Water condensing on the ceiling of the bleaching room and coming into contact with iron nails, then dropping on the goods, causing iron stains. Copper nails should be used.

3. I have known where mineral oil used in oiling hydro-extractors has been splashed out of oiling cups onto the goods and thereby causing stains. The oiling should be done carefully. Also see that no oil gets from the bearings into the washing machine.

4. Keep the goods wrapped up when

transferring from one place to another, and do not let them lay on floors, or anywhere where they will come in contact with iron nails.

5. Flush or run to waste the first water drawn from iron pipes, especially on Monday mornings.

6. "Fulton" might also walk through the mill and see if there is a line of oil on the floor, where it has been thrown off some wheel or pulley, as in some way or other the goods might come in contact with this line.

Texarkana.

COST OF MANUFACTURING LACE

Editor Textile World Record:

I would like to have information regarding the cost of making torchon and bobbin laces like enclosed sample. Manufacturer (1948).

Our French correspondent, who has made a careful investigation of the matter, replies to the question as follows:

The samples submitted bear the name of "platt," as they are made of cotton, the same

article if made of silk being styled "mat" in France. The motifs are produced by a thread coming from the bobbins on the carriages. The cost of production of this class of lace is very variable. There is the cost of cotton, which varies widely, while the wages of the operatives change from day to day. The cost for patterns and for replenishing cards have their effect on the cost of production, varying according to the size of the order. The samples were made on a machine having 14 points to the inch. The following are the prices paid at Calais for operating a 14-point machine, 174 inches wide:

Operatives at the rack, 1,920 motions, 14 cents.

Removing empty bobbins and placing full bobbins in place, 70 cents per set.

Removing the waste yarn from the bobbins, 70 cents per set.

Winding, 70 cents per day.

Warping, $1.40 per day.

The cost of the cotton varies with the pattern and is estimated at 1/2 to 1/3 of the yarn on bobbins. The cotton represents from 40 to 80 per cent. of the total cost of production.

Gaul.

SPINNING MOHAIR YARN

Editor Textile World Record:

I would like to have information regarding the spinning of mohair yarn from pure mohair, giving the sizes of yarn obtainable from the different grades of hair, number of turns of twists per inch. I would also like to have information regarding the different qualities of Turkey and Cape mohair, and how they are graded. Chester (1930).

Turkey mohair varies in count from say 28s to 40s, or even higher, varying in length from 6 to 10 inches. It has a good luster, and handles fairly well, is mainly used for dress goods—drapes well when made up—is not difficult to dye; and in fact makes a good looking and a good wearing cloth.

Cape mohair runs rather finer in the bulk and ranges as high as 60s. The luster varies from medium to very good, handles well, especially the higher counts, and makes up in some of the finer classes even better than Turkey mohair. It has all the good qualities of Turkey, and for making cloths in which mohair is used with other fibers, it generally gives a better result.

In the making of astrakan cloths the finer qualities of both growths are used for mantle and trimming purposes, and the lower grades for mats, rugs and coarse upholstery. For many classes of goods, both Turkey and Cape, with the better qualities of Lincoln, Leicester and other Luster wools with good effect.

Again, both classes are used in making up fancy cloths along with worsted. For stripe

effects, alternate stripes of worsted and mohair in the warp and in check effects, alternate bobbins of mohair and worsted as required by the design. In plain goods made from mohair and wool blended in drawing, great use is made of the merino or melanging boxes of P. Smith & Sons and Platt Bros. before stock enters first drawing box.

As to grading: The same system is used as in grading wools, with this exception: Given a quantity of bales of wool of a certain growth and mark and it can readily be assumed what average qualities the wool will sort into, but with mohair it is different. Every bale must be sorted on its own merits, as there is a decided difference between one bale and another, even if they are both from one source and have been bought in one lot. Hardly any two spinners grade alike, but each do it as most suitable for their own special class of work, and after combing process, vary in their different styles and number of processes in drawing.

To speak generally, Turkey mohair is chiefly used for dress goods; and Cape for upholstery and the heavier makes of cloth. There are no regular top makers in the mohair trade, i. e., who do mohair and nothing else, in fact most of the spinners buy their mohair in the bale and comb it themselves.

In the spinning of mohair yarns from pure mohair, the style and number of processes and machinery used is very similar to those relating to ordinary worsted spinning, and the counts obtainable vary from the lowest counts in worsted up to about 60s. Twist, of course, varies according to the different qualities, and the ultimate use to which the yarn has to be put, or to get certain effects. For instance, the same count may be made with 10 or 15 turns per inch. The first would be to get softness and the other to get strength.

No reliable data can be given for twist, but the following may be taken as an average:

20s to 26s	8½	turns per in.
32s	10	turns per in.
40s	12	turns per in.

J. B.

VARIATION IN COTTON YARN

Editor Textile World Record:

What is a reasonable allowance for variation in the size of 60s, 70s, 80s, 90s, 100s, 120s and 140s cotton yarn? In case excessive variation was found to arise between the comber and jack what are the probable causes and what steps should be taken to remedy the difficulty? Weston (1951).

A reasonable allowance for variation of Nos. 60, 70 and 80 would be about 5 to 6 numbers; in Nos. 90, 100 and 120 about 8 to 10 numbers; in 140s yarn an allowance of 12 to 15 numbers. This is under ordinary running conditions.

The second inquiry is one to which a variety of answers could be given. Different localities require different answers. Humidity in the atmosphere is a very important factor in a cotton mill. Excessive variation between comber and jack is often caused by the humidity of the atmosphere. We all know by barometric readings that on a damp, rainy day the atmosphere is much heavier than on a bright, sunny day. Therefore, the cotton going through the different processes absorbs moisture, and on a damp, rainy day it is invariably found that the sizes are heavy. If the gears are changed to make the work as it should be, the work is light on the next sunny day. It is plain to be seen that variations in the atmosphere result in a variation in the size of the roving. Every mill should have some means of keeping atmospheric conditions as uniform as possible. Humidifiers do a great deal toward remedying this trouble. The cotton batches should be laid so that the air will thoroughly penetrate them. If cotton is run soon after being opened the moisture is lost during the operation and will make the sizes vary on different processes. Care should be taken to have the condition of the cotton as near as possible to the conditions of the mill, before entering the picker.

The machinery is not always perfect and machines geared and set exactly the same may show different results. The variation may be due to mechanical deficiency or perhaps if sized from different parts of the room, the humidity may be the cause. Splicings should be made carefully, neither overlapping, nor one strand allowed to run before

being replaced by a new strand. The stop motions should act as quickly as possible. The machine should be kept clean and properly oiled. Rollers or bearings of any kind allowed to become dry or full of waste cannot turn freely and uneven work is the result. To overcome these difficulties, remove the cause.

I have touched upon only a few of the reasons that appear every day.

Winton.

. . .

I consider a reasonable allowance for variation in the size of 60s to be four counts; 70s, four; 80s, five; 90s, six; 100s, seven; 120s, eight; and 140s, eight.

The most probable cause for excessive variation between the comber and jack are singles. If an end breaks on the comber and the machine continues to run single, the fine ends will go into the finished product. A lap running out on the back, or a roller lap on the feed roll will also cause a variation in the yarn. Stop motions to a certain extent prevent single work. It is a very good plan when an end breaks down on a comber, to stop the machine, take the single out of the can, and lay enough on the table from the drawbox to make up the deficiency that the single has caused.

Another cause for variation is in the waste taken out. This, of course, goes to make the yarn light or heavy as the case may be. If a comber is supposed to take out 18 per cent. of waste and it is taking out 20 or 21 per cent., the result will be light work. Other combers may be making heavy work on account of not taking out enough waste, say 16 or 17 per cent., instead of the 18 per cent. required. This can be remedied to a certain extent on the doubling on the drawing frame, but it can also be overcome by careful watching by the one in charge of the combers. The percentage of comber waste can be altered one way or the other by changing the time of feed, but I find that if the comber has the right settings for a certain staple the feed will come about the same at all times. Other settings will make the feed and percentage irregular. It is a good plan to take the percentage of comber waste, say once a month, and the best way to do this is to take them all on the same day. If a certain number of combers are taken on one day, and the humidity of a room is very dry, the percentage will not be the same as on a damp day.

After the combing process comes the drawing, which usually consists of three processes. The drawing machines are for the sole purpose of evening up the drawing as it is taken from the comber. These machines are provided with stop motions, mechanical in most cases, electrical in others. These motions often get out of order and need careful attention to get the best results. On a mechanical drawing frame the spoons have to be properly balanced, also the stop motion in front of the drawing frame above the calender rolls, and they should be watched to see that waste does not prevent their working properly. If singles get through the help should be instructed to take them out of the can. Electric stop motions need very close attention as they may be working all right one minute and the next the whole system may be out of order. There is one objection to the electric stop motion and that is if one part of the machine gets out of order the whole machine is affected. The slubbers, intermediate rovers and jacks are not so liable to make uneven work as the former machines. If a roving breaks in the creel on the rover the end will break down on the bobbin on the front of the machine and the hand employed to look after this particular machine will take off the singles before running the machines. If he does not take off the singles the hand employed on the next process will detect the bad work and take it out. A shell roller is liable to get dry for want of oil. This will affect the weight of the yarn some, but will not run very long before it breaks down.

Boulanger.

. . .

We would consider a variation of 3 or 4 per cent. on such work to be very good under ordinary circumstances. The usual causes of variation under such conditions are

caused by too many or too few ends being put in some processes of doubling. The remedy is apparent when the cause is found. I believe it good practice to have all gearing on the drawing rolls of all the machines of one process exactly the same, and to do all the changing on the finisher drawing and on the slubbers, if possible. Make sure that the drawing rolls are clean, evenly weighted and in good condition. The trumpets should be small enough to give sufficient compression so the sliver will not be strained when it is being run out of the cams. All skewers should run easy and smooth so as not to cause strain on the roving. The creel rods and all parts of the machine over which the roving runs should be smooth and not cause any more strain on the roving than can be prevented.

I generally take a size on each process of drawing from two to four times each day. By watching the general drift of the work and changing accordingly we are able to keep very close to the standard.

Lakewood.

STAMPING INK FOR SHEETINGS

Editor Textile World Record:

Can you supply me with a formula for making a blue stamping ink for sheetings?

Augustus (1895).

Our English correspondent replies as follows:

The answer to "Thornton" (see "Stamping Hosiery," p. 537, Textile World Record for February) applies in a measure to this query. The practical choice lies between a water paste and an oil compound and it is usual in Manchester to employ the farmer and to buy it ready mixed. A small sample of the kind of paste made and sold by the stamp-makers is sent herewith as an indication of the nature of the stuff. The paste is procurable so cheaply in the manufactured form that it is a doubtful economy to attempt to mix one's own from material bought in very small quantities. The two essentials are a paste of a somewhat mucilaginous character and a powdered dry color, thoroughly well mixed together. Doubtless there are many pastes that will serve. Equal quantities of dextrin and Prussian blue rubbed together with water upon a slab is one recipe that has been advocated. Another is to take equal quantities of gum arabic and gum tragacanth, soak them in water until the first is fully dissolved and the second fully swollen and then grind in the dry color. Blood albumen may be used as a thickener. The paste is made stiffer than required in use and is diluted with water to the desired consistency at the time of using. A paint mill may be used for manufacturing the paste and ensuring a thorough mixture, or the color and mucilage may be ground together by hand on a marble slab, preferably with the aid of a marble crusher and a palette knife.

Having obtained a satisfactory medium the question of shade of ink is a matter of choice. Prussian blue is perhaps the best blue pigment for the purpose, but ultramarine can be used and darkened if desired by adding a touch of black. There are various carbon blacks which can be employed for making a black composition. Yellow is got from chrome yellow and this mixed with blue provides a range of greens. Reds are obtainable in large variety in the form of lakes, i. e., dyed mineral matters. The earth colors, sienna, ochre, umber, provide browns and are cheap. Trouble is saved if the color is bought in a state of impalpable fineness, but in any case there must be no grit to interfere with the clearness of the impression or clog upon the edges of the stamp. Aniline dyestuffs are too powerful and penetrating for this kind of work and the inquirer can be recommended to use the finer grades of paint color. The cheap grades are heavy and inclined to settle out of the mixing and are liable to be impure. There are colors which should not be used, and real vermilion is one which, besides being expensive, attacks copper and spoils copper stamps. However, the unsuitable pigments are the ones least likely to be found unless the mistake is made of buying too cheap an article.

Some preservative is added to water paste inks to prevent decomposition and a number of substances serve. There is a carbolic preservative in the sample sent. Salicylic acid, oil of cloves or oil of thyme would probably

be equally efficacious. Printers' ink is the best material to employ in case an oil compound be preferred and this is obtainable in all colors. It should be thinned for use with boiled linseed oil. The ink is more tenacious than the paste and its impression does not so readily wash out. Fluff and dirt adhere to the moist ink firmly and there is a certain amount of waste in its employment, but to set against this is the fact that a very little goes a long way in work. Wessex.

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WEIGHTS AND MEASURES FOR CORDAGE AND TWINE

Editor Textile World Record:

Should there not be law, national, respecting weights and measures? Read the editorial in the Cordage Trade Journal, issue of June 15th, copy of which we are mailing you today. To find the trade rebelling against net weight and insisting on gross weight as a basis seems a great reflection on the trade generally. "Gross" is so vague and without meaning that it is given to deception and used freely by those merchants who attract trade by a low price and make their profit by the grossest kind of weight. The American weight (pound) should be pronounced emphatically sixteen ounces.
Wessex (1925).

The only complete remedy for the abuses in the selling of cordage and twine is a national law regulating the standards so that buyers and sellers in all parts of the country may be required to do business on the same basis. In this connection the recent experience with the attempt to standardize berry baskets is instructive. A bill was introduced by the Senate a year ago and the agitation at that time led many of the Massachusetts jobbers of fruits to serve notice on the shippers in other States that they must in future send berries to Massachusetts only in baskets that conform strictly to the Massachusetts standard. The bill failed to become a law last year, but this year the good effects of the agitation are seen in the much more uniform and the larger size of the baskets in which berries are retailed in Massachusetts.

The experience in the berry basket agitation applies to the proposed reform of the methods dealing in cordage and twine. If the agitation is continued a sentiment will undoubtedly be created in favor of selling by net weight, and evidence of this is found in the notice by the Dolphin Jute Mills last May that on June 1st they would sell all their products by net weight. Their decision is all the more significant because their representatives were, at one time, very active in opposing the efforts of the New York City weights and measures commissioner to establish the net weight basis for cordage. The adoption of the net weight basis for cordage will also be hastened by the advantage that will be gained by those firms that adopt it early. Other things being equal, buyers will favor the dealers who sell on a net weight basis.

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CALCULATING THE COUNT OF YARN

Editor Textile World Record:

Referring to "Weymouth's" (1937) inquiry regarding the count of yarn, would say that there is a formula by which one can calculate to one-fourth of a count the size to use for goods of a given weight on any number needles. It is necessary to keep within the limit of the gauge of the machine as each gauge is limited to certain sizes of yarn that can be run successfully. I have prepared the formula so that it is practically correct. If "Weymouth" wants to make a ladies' hose to weigh 1 lb. 8 ozs. on 176 needles, he should use a No. 18 yarn. If he wants to make half-hose he will need a No. 11 1/2 count yarn. Cipango.

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MOTH PREVENTATIVE

Editor Textile World Record:

What is the best preventative for moths in a sweater mill? Very often I have discovered moths at work and, of course, it is always in the best goods.
Hayward (1896).

Wormwood is the preventative usually employed in English warehouses and is the one in which most confidence is placed. The herb is gathered in early summer by gypsies, who peddle it at so much a bundle. The green bunches are hung on nails in the ceiling and remain until the new supply arrives. Here is a passage from old Nicholas Culpepper ("British Herbal"): 1896—A A.

The herb wormwood being laid among clothes will make a moth scorn to meddle with the clothes as much as a lion scorns to meddle with a mouse or an eagle with a fly.

Perhaps the remedy will be more effective if laid among "Hayward's" sweaters. He

might, for instance, enclose the dry plant in muslin bags. Evidently the inquirer does not stove his sweaters, for no moths come where there are sulphurous fumes. Stoved blankets enclosed in cotton wrappers are quite immune from damage by moths and are the safer for being kept in a slightly moist atmosphere, which favors the production of the sulphur stink. A cotton wrapper to cover garments lying in stock might be useful in itself, apart from any aromatic, if kept free from holes. The selective tendency of moths has been noted by other people. The insects seem to prefer soft fabrics in which to lay their eggs and in cloth warehouses attack goods made from fine merino or soft shoddy rather than the harder fabrics.

According to a housewife's manual "camphor, cedar wood, Russian leather, tobacco leaves, bog-myrtle or anything strongly aromatic" are specifics against moths. Block or powdered naphthalene and other tar products are employed, but their efficacy is more doubtful than that of wormwood. One warehouseman declares he has seen moths eating naphthalene (camphor-tar), but this may be a base invention. It is well to encourage the warehouse help to destroy every moth that is seen. Venator.

MOSAIC TEXTILES

Editor Textile World Record:

Is there not some system of producing pile fabrics in colors and designs by other processes than weaving? I have heard of the reproduction of elaborate pictures by in some way cementing a separate cut pile upon a woven foundation and would be pleased to hear how this was done.

Missouri (1928).

The reference is apparently to what were called "mosaics," which were first produced in France or Germany and manufactured by one firm in England for about ten years after 1850. The pile was formed of worsted yarns cemented to a linen backing by a rubber-solution. The method is believed to be quite obsolete, but the manner of its working is known. The picture to be copied was first plotted-out upon squared-paper in the colors intended for use and the yarn was dyed. The yarn was wound then from bobbins upon a drum about four yards in circumference and cut to that length. These ends were laid parallel in a frame in which the details of the design paper began by drawing out two threads from the cut yarn, tying them at each end in a weaver's knot and inserting them between the first couple of reed wires. One of these threads formed the bottom row and its fellow formed the second. The two, therefore, were not always of one color. The yarns were passed between the equivalent wires in the intermediate reed and in the last reed. At the head and foot of the frame the threads were secured in position by passing through the loop a flat wooden lath which was held flat against the wires. The order of the colors was carefully checked as the work proceeded and loose wires were moved about to ensure parallelism along the whole length of the frame. In the end, a large oblong bulk of straight yarn stood built up in such manner that its section composed the details of the picture.

Boards made for the purpose, and about 18 inches wide, were placed beneath and above the mass, from side to side of the frame, and were tightly bound with strings passed around each of them. The bulk was thereby compressed and side boards were set in. Except at the two ends the whole setting was thus boxed-in and the loops were then cut, releasing the yarn from the reeds. Cuts were made through the bulk, converting it into four parcels of one yard each. These were put into a press, reduced to the desired size and set up with the yarn standing perpendicular. The threads were cut clean and level on the face and a linen cloth previously coated with rubber was laid on them. When the yarn had been cemented fast a cut was made with a very sharp knife, giving a pile of about 5/32 of an inch. The yarn was moved up in its box and another cloth was laid upon it and about 900 pictures were obtained from one 12-foot setting of yarn. The process was introduced to England by Schubert, a German, and examples of the work may still be seen. Generally, the attempts at reproducing landscapes proved more agreeable than copies containing human forms or portraits.

Wessex.

Knitting Department

THE KNIT GOODS SITUATION

Manufacturers have been very busy during the past month, supplying heavy weight underwear on duplicate orders. A great many of these orders carry with them urgent requests for immediate delivery and all manufacturers have been trying their best to take care of everything that came their way to help make up for the quiet times during the early part of the season.

Shipments of spring weights have already begun, especially with large Western and Southwestern jobbers. It begins to look as though most spring orders would be taken care of on time the coming season, and manufacturers are now in a position to promise early deliveries on duplicates on nearly all lines of light weights.

Business for fall 1912 has started to engage the attention of buyers, but up to this writing, we cannot learn that there has been any great eagerness to place orders. The lines have all been opened practically since November 8th, but manufacturers and agents in the initial market seem to be under the impression that the heavy buying season will not take place much before January 1st. As one manufacturer expresses it,—the coming season finds "the textile manufacturers in possession of raw materials at practical prices" and some of the difficulties attendant upon satisfying the trade with such merchandise as a six-pound garment to retail at 25 cents is past for one year at least. One of the largest producers of this priced merchandise is offering a six-pound garment at $1.75; one weighing seven pounds at $1.85 and a waste yarn garment to run eight pounds in weight is being offered as low as $1.90 for ordinary and $2.00 for the extra sizes.

Seven-pound bleached vests and pants are being shown as low as $1.90, with extra sizes at $2.00 and the same concern is offering a women's peeler tuck ribbed suit, weighing 11 pounds to the dozen at $3.37 1/2, with extra sizes at $3.62 1/2.

The Avalon Knitwear Co. of Utica are out with their line of Setsnug goods for fall and are taking orders for the women's vests and pants in both peeler and bleached to weigh eight pounds at $3.50. Combination suits of the same cloth, running 12 1/2 to 13 pounds to the dozen at $6.75. This concern is also showing a new line of medium weight vests and pants. These are made with hand trimmed finish in peeler color, tuck stitch, the vests and pants to weigh about 5 1/2 pounds at $3.50, with suits at $6.75. Their line of men's cotton ribbed combination suits heretofore sold to weigh 14 pounds to the dozen, have been increased to a 16-pound line and the price has been reduced to $6.75. They also offer these made with drop seat at $7.25.

The Union Mills Co. are showing men's fleeces at $3.12 1/2 for a line, running 12 pounds to the dozen; at $3.25 for one running 13 pounds, and also showing a cotton trimmed line made in the Sagamore branch that weighs 14 pounds at $3.37 1/2. The Union Standard Sanitary Fleece, weighing 14 pounds, with silk galoon binding which was sold last season at $3.90, is being offered at $3.62 1/2, and they are also taking orders on a line of boys' fleeced shirts and drawers at $2.00 per dozen for all sizes.

Last season, men's ribbed shirts and drawers to weigh 11 pounds to the dozen were sold to more or less extent, but after the season opened at retail, it became apparent that the majority of the consumers of fifty-cent ribs were looking for more weight and in a great many instances, bought fleece lined goods in place of the ribbed, in order to get garments heavy enough, but with the coming of raw cotton at so-called practical price for another season, manufacturers will again be able to show 12-pound cotton ribs at popular prices. These are being offered in single thread goods at

$3.37 1/2 to $3.50 and two-threaded lines at $3.50 to $3.62 1/2. Some of the Southern and Southwestern trade will continue to buy the lighter weights, and these may be had in a 10-pound as low as $3.12 1/2 and 11-pound at $3.25 to $3.37 1/2, but the manufacturers that we have talked with concerning this matter state that the bulk of the orders are coming in on the heavy weight.

There was quite some business done during late spring and early fall on a line of men's medium weight cotton ribbed shirts and drawers and the same were sold last season at $3.62 1/2, but are being offered for 1912 as low as $3.37 1/2.

The fact that the coming year is one in which the presidential election takes place, will undoubtedly have its effect to some extent in retarding the placing of advance business, but unless conditions arise that will curtail the consumption, the call for merchandise for immediate use when the season opens will make up for the small advance orders, and it will be well for jobbers in particular to bear this in mind and not be too conservative in preparing for the season's need.

The prices quoted above are lower than was looked for by some buyers and there is some criticism heard among manufacturers to the effect that they are lower than present raw material conditions warrant and it is freely predicted that with the placing of any volume of business, higher prices will be made that will prevail throughout the season.

HOSIERY

The hosiery trade is in a very satisfactory condition at the present time. Duplicate orders are coming in quite freely and while they are not large by any means, there are enough of them to make a very satisfactory business for the manufacturers who are in a position to make fairly quick deliveries. Heavy weight cotton and wool goods are in good demand and it is being shown now that buyers were over conservative in the placing of their orders during the early part of the season, as difficulty is now experienced in getting deliveries as fast as wanted.

Many lines are being shown for 1912. Prices on wool and worsted lines remain about the same as for 1911, but with the understanding that qualities are to be improved. On fleeced lines, reductions of from 2 1/2 to 5 cents per dozen from last year's prices are being made. So far orders have not been placed freely and there is a tendency on the part of buyers for one reason or another to delay doing a fall business and the probabilities are that it will be well into January before it is taken up very energetically.

Orders for spring lines have been scarce during the past month, with the exception of a few orders on popular priced silk goods. Silk hose continue to occupy the center of the stage and the indications are that they will continue so, as long as the present values may be had. There is some talk of higher prices on silks on account of the present trouble in China and this may mean a falling off in this popular class of merchandise.

While there has been a great lowering of price of American cotton on account of the large crop, the reverse is true of the Egyptian cotton. It is smaller than usual this year and in consequence, all lines of hosiery made of Egyptian yarn are just as high, if not slightly advanced over the prices that have prevailed for some time.

FANCY KNIT GOODS

There is a general opinion abroad that the coming season on coat sweaters will be one in which the demand will be very large. The present season has been quite satisfactory to manufacturers, prices have been generally maintained and the orders have been of good volume. Indications are that the principal style of garment for men for another season will be the Shaker knit with double Byron collar. There will also be a good sale on a garment made on cardigan stitch, sort of hunting coat idea. This is made with a high turnover collar, throat latch, pockets lined with sateen and are being shown for the coming season at $25.00 to $42.00 per dozen. Other styles of collars that are being sold freely are the semi-sailor, as well as rough neck or storm collars.

The big demand during the past two months on all lines of men's coats has been for dark maroon and the indications are that this demand will continue for another year with oxford grey running as a close second. There are a few navy being bought, especially in the lower and medium grades. Tan, brown and green are almost passe.

THE NEW AVIATION CAP.

Among the lines that go into a fancy knit goods department on which a splendid business has been done during the season just past is the knit skirts made of wool that get to the retailers to sell at 75 cents to $2.00 each. Manufacturers of this class of merchandise report the business as being very much larger than in any previous year. These garments are fairly close fitting and seem to meet with general favor,—are being sold largely in black, white, navy, and light and dark shades of grey with several rows of stripes of contrasting color around the bottom. There has also been a good demand for these with Persian stripes.

Another article in the fancy knit goods line that manufacturers are very busy on, is the aviation cap. During the past two months, orders have come forward very much faster than the manufacturers could take care of them and one of the large mills in which this class of goods is made, reports that they could not fill 40 per cent. of the orders that were given them.

We illustrate in this issue a cap that has sold very well in combination of white and red, white and navy, white and sky, white and lavender. These are made of worsted roving with a top knob crocheted in, and are made to retail at $1.25.

SPRING NEEDLE HOSIERY

BY LARAMIE

Although, of course, most American hosiery that is knit on circular machines is made on latch needle machines, a spring needle machine for fine stockings turns out fine work if it is properly handled. I presume half hose may also be made on the spring needle machines, although I can only recall making misses' and children's on them automatically, heel and toe without stopping. I never made half hose, but when using these machines on ladies' and misses' work understood that the builders were getting up a transfer cup so that the half hose top can be transferred onto them.

The spring needle machines which I have reference to are divided in two sections and each side works on an eccentric rod, one side up while the other is down. The yarn carrier feeds the yarn into the sinkers on the side that is up, while the other half is casting off the stitch. Each needle has its own individual jack or bar which presses against the beard of the needle as it goes down.

In making ladies' stockings on such a small diameter cylinder as 3 1/2 inches, it is necessary to make a good size top on the stocking. These machines instead of making a very loose stitch make what is called the half cardigan or tuck stitch top of any length required. Every alternate jack or individual press off is longer than the others and by the working of a cylinder bar around the bed of these jacks, the long jacks are held up and hold the stitch on one revolution and cast off on the next revolution.

In order to make a heel and toe on these machines there are a certain number of long needles on each side of one-half of the cylinder that throws in a splicing yarn automatically. There is also a drum which will take down one needle on one side and hold it down and then one of the other side until the required number is down to make a good

sized heel. The drum will then release each needle separately on each side until the end of the heel is made. The greatest difficulty in making these spring needle stockings is not letting these individual halves or one side go down too far. It must go down just far enough to cast off the stitch or they will make holes which will increase the percentage of seconds, especially when manufacturing high grade stockings. On the cheaper grades of stockings these seconds can be mended after they are dyed.

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IN CHEMNITZ

The Chemnitz correspondent of the "Textile Mercury," of England, writes that the United States, which has heretofore been the best market for Chemnitz, is very well employed on knit goods made at home, but that owing to the impending tariff revision American buyers are only buying from hand to mouth. This is having a bad effect on the German hosiery trade.

"Several large orders have been received for fine petinet stockings, and certain manufacturers will not now accept orders under three months' delivery. Makers of trame silk goods are also busy; the wearing of these goods seems to have become a veritable mania, and orders are coming through from all markets. The fashion will probably not last long, as very cheap lines are ordered, and of course they are not durable. For the United States trade practically nothing is being done in silk stockings; the high duties enable the Americans to bring out lines far cheaper than German goods.

"Glovers are building great hopes on the United States Customs revision; if, as believed, the duties on woolen gloves are much reduced then the demand will be very heavy again. Buyers are also taking up samples of new woolen gloves more readily than has been the case for some time past. It is still hoped that long gloves will again come into fashion, as more orders for these (and also inquiries) are being received from European markets. Meantime machines are resting, as stocks in hand are still large."

CALCULATING THE COUNT OF YARN REQUIRED FOR HOSIERY

BY CIPANGO

The question no doubt has been asked many times, "What size yarn must I use to get hosiery the right weight?" Every hosiery manufacturer has his method of answering this question, and usually he keeps the process to himself. Having been called on frequently to make up different weights of goods ranging from 44 to 200 needles, I have been much puzzled at times in getting the proper size without a great many trials. A brother overseer and I have worked out a formula which will give practically the correct size of yarn required for goods of any weight, providing, of course, the count is kept within the limits suited for the number of needles to the inch.

Suppose a 1 pound 4 ounce half hose is wanted on 176 needle, 3 3/4 inch machine. Divide the number of needle by 6 and subtract the quotient from the original number. Divide the remainder by 10 and divide the number of ounces the goods are to weigh by the quotient. Then multiply that quotient by 22 or the average length of a half hose. The calculation is as follows:

$176 \div 6 = 29.33$. $176 - 29.33 = 146.67$. $146.67 \div 10 = 14.667$. $20 \div 14.667 = 1.36$. $1.36 \times 22 = 29.92$, or practically a single 14s yarn which weighs 29.75 grains to 50 yards. The above, of course, is for half hose only.

For ladies' hose the process is the same, only when multiplying the last time a different constant number must be used. For example, a 1 pound 14 ounce ladies' hose is to be made on a 176 needle, 3 3/4 inch machine. Proceed as above until the number of ounces wanted (30) is reached. Then divide 30 by the last quotient and multiply the quotient by 14.58. Thus:

$30 \div 14.667 = 2.04$. $2.04 \times 14.58 = 29.74$ grains, or one one-hundredth grain less than 1/14s yarn, which is, as stated above, 29.75 grains to 50 yards. While there may be a slight variation in some cases, enough irregularity will be found in the yarn to make up the difference. Mill men usually estimate

the yarn counts required from their necessary experience in making different weights. The necessary sizes can also be figured by proportion, providing we have a definite size and weight as a basis. We know that to make a 30 ounce hose on 176 needle, 3 3/4 inch machine, a 1/14s cotton is required. Suppose we want to make a 26 ounce hose, then: 29.75 : 30 :: 26 : 26.2 (grains). Yarn weighing 26.2 grains is practically a 1 1/6s cotton.

SHRINKAGE IN WOOL UNDERWEAR

Editor Textile World Record:

Can you give us any information on the subject of shrinkage in the manufacture of woolen underwear? Norfolk (1956).

I take it for granted that the information you desire is for flat knit underwear which is cut in the grease and scoured, fulled and boarded in the garment. In the first place the conditions such as stock and the method of handling must be taken into consideration. Each mill must determine the exact shrinkage on every style they run by actual tests, as for instance an all wool line would require considerable more allowance for shrinkage than a line with 30 per cent. cotton. Also different grades of wool will take a different shrinkage and styles containing shoddy still another shrinkage. All these must be tested out each time a new style is added to the line, or each time the ingredients in the batches are changed. I have found that it is necessary to knit these goods one inch wider than the actual width required at boxing and must be cut from 8 to 12 inches longer than length required at boxing, to allow for shrinkage at both looping and fulling. Always keep in mind that the conditions under which the goods are handled will change the shrinkages.

The following is a test shrinkage of an all wool garment knit on 16 gauge, 21 grain yarn (weighing six ends), 19 inch cylinder cloth measuring 21 inches at the cutting table, cut 40 inches long, sleeve cut 22 inches long. To the body of this garment is looped a 6 inch rib tail and to the sleeve a 6 inch cuff. This garment goes to the scouring from 39 to 40 inches long, 21 inches wide, and finishes at the boxes 34 inches long, 20 inches wide, sleeve 21 inches, cuff and borders 4 inches long. Badger.

CALCULATING COST OF HALF HOSE

Editor Textile World Record:

Please give me information regarding the cost of half hose made with single 12s yarn for the tops, single 18s for the body and single 30s for splicing, all carded peeler yarn. Also the cost for ladies' hose made with single 30s for the body, single 30s for the splicing, with one-inch garter tops; production 500 dozen per week. I would like the cost stated for each of the following items: power, light, heat, lubricating, belting, depreciation, knitting, looping, examining, mending, dyeing, boarding, stripping, pressing, folding, stamping, boxing and boxes, stanpls, fixer, ribber, take-up, cases, freight, interest, insurance, taxes and manager. Knitter (1953).

The yarn proportions given above are not in accordance with my ideas. To make a good wearing half-hose it is necessary to make them on a 200 needle, 3 3/4 inch machine from 1/18s yarn. A 12s yarn would be too heavy for the rib top, making the goods out of proportion. It would be necessary to have about 30 knitters unless experienced help is employed, also about 6 ribbers and 6 loopers. The average production would not be over 4 1/2 dozen per machine per day, figuring that about every day one operative is out and the machine idle.

The cost of knitting will be about 10 or 12 cents per dozen for topping and knitting, one operator running from two to three machines. Prices for all operations depend on the locality and competition. Looping with trimmer attachment, 4 cents per dozen. Inspecting and mending can be done for 1 1/2 cents per dozen. Dyeing is usually calculated by the pound at 3 1/2 to 5 cents for blacks, whether plain or lisled in the cage. Boarding and stripping is usually done by the same operative, at least this is the practice in the best mills and can be done for 1 to 1 1/4 cents per dozen. Pressing is done for 40 to 50 cents per 100 dozen, according to the kind of press used and the nature of the finish. Mating and pairing is usually paid for by the dozen and at about 65 cents to $1.00 per 100 dozen. Folding, packing and boxing is also piece work and will cost from 75 cents to $1.00 per 100 dozen. The cost of stamps vary according to the nature of the

stamp and design, and number of words or letters used.

Knitting machines require for proper and steady speed, say 1 h. p. for every 4 to 6 knitters. Depreciation of machinery is usually figured at 10 per cent. per annum. The other expenses mentioned will have to be figured according to conditions, as no fixed rule can be safely adopted.

A fixer can be had for $12 to $15 per week and a manager can be had at almost any price, but one who makes the mill a success would naturally be a fairly high priced man. I would not advise a man who, like "Knitter," does not understand the business, to go into it and depend upon a manager. Under such conditions I do not believe he could make a success of it.

For the ladies' hosiery about 40 knitters are needed as they will turn off not over 3 1/2 dozen per day. For 30s yarn a 220 to 240 needle machine is needed. A 40s or 50s yarn is the better size to use for splicing and reinforcing. Ribbers are not needed in ladies' hosiery, but seven loopers should be used, as the finer goods will be slower than the coarse ones. Cipango.

PRICES PAID FOR FINISHING HOSIERY

Editor Textile World Record:

We have just installed a finishing plant and would like to get some idea of the prices paid for the following work: Boarding and drying soft cotton half hose, lisle and mercerized half hose; paper pressing half hose; pairing, stamping, folding, boxing, banding and labeling ready for casing. Our factory is in a country town of about 700 inhabitants. Saxon (1958).

I have found the following prices to be about the average paid for finishing half hose:

For boarding, 90 cents to $1.75 per 100 dozen from 136 to 240 needles.

Paper pressing, from 40 to 75 cents per 100 dozen, according to the fineness of the goods.

It is a great deal more trouble to get the goods on the boards, strip and lay them out properly when working fine goods, hence the increase in price. The same thing occurs when pairing and the prices range from 75 cents to $1 per 100 dozen. Stamping is usually done by small girls and they are paid by the week, generally from $2 to $3, according to ability. There are some states with compulsory school laws for children under 16 years of age, and in this case it would be advisable to have one all round girl in the finishing room and let her fill in her time at something else when not stamping. Folding, banding and boxing is considered one operation and the help is generally paid from 50 to 75 cents per 100 dozen. Labeling should not be done in the mills, but should be left to the paper box maker. There may be some cases where it can be done cheaper than the box maker could do it.

Cipango.

DYEING HOSIERY

Editor Textile World Record:

The enclosed samples of hosiery have been dyed together in the same batch by the ordinary oxidized aniline black process. You will notice by comparing the two stockings that one is a bluish black and the other has a brownish tint. This happens quite frequently and I would like to know what causes the trouble and how it can be remedied. Dyer (1957).

This trouble could arise by not boiling the goods, or if they are boiled by not washing them properly. Great care should be taken in putting the goods into the kier in order that the liquor may penetrate through them evenly. After boiling and the liquor run off it is a good plan to have the water enter from the bottom of the kier. Let the water and steam enter at the same time and when the water is quite hot let it run off. Fill the kier up again in the same way and run off. Then fill up with cold water and let the goods cool off. I have had uneven goods by having a careless man run on cold water directly after boiling. I use about 1 lb. of caustic soap and 1/2 lb. of palm oil soap to 100 lbs. of goods. When the goods are properly washed off and extracted they should be thoroughly dried and no wet spots left in them. Put the dye solution in the tom-tom first and see that the goods are all covered by the liquor. After extracting they should be put in a cage at about 134° F., and the temperature then slowly lowered to 120° F. There should be some moisture left in the goods, but too much will cause trouble. I have found it a good plan after the goods

come out of the cage to leave them over night and chrome in the morning, using the same care in the dyeing process. See that the goods are properly washed off and a good softener used. Roscoe.

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GAUGES OF A LATCH NEEDLE MACHINE

Editor Textile World Record:

Please give me information on the following points:

1st. The different gauges of a latch needle knitting machine. Example, 8 cut, 24 gauge.

2d. The count of yarn that is best adapted for the different gauges; from the heaviest to the lightest. Example, 7s heaviest—10s lightest on an 8 cut machine.

3d. If you were to pick up a latch needle and look at it, how would you tell what gauge it was and the size of the hook.

4th. The cylinder needle as a rule is larger in the hook than the dial needle of the same machine. If you were running from heavy to light count of yarn on the different cuts or gauges, what hook needle would be preferable on both dial and cylinder? Lester (1952).

The different gauges of a latch needle machine are as follows:

4 cuts, 12 gauge
6 cuts, 18 gauge
8 cuts, 24 gauge
12 cuts, 36 gauge

By cuts is meant the number of needles or slots to an inch or the circumference of a cylinder. As a rule cylinders are not cut much finer than 12 to the inch, because as high as 42 gauge needle can be used in them providing when ordering a cylinder cut 12 to the inch it is designated for 42 gauge. The 42 gauge needle being finer the slots or cuts are made to fit this gauge. This also applies to any gauge as it is found if the article to be produced is light in weight, but not fine in the stitch, a cylinder is procured which is cut as before stated. For example, a 4 cut cylinder if cut for it can run with an 18 gauge needle, or a 6 cut can run with a 24 gauge needle, etc.

The cotton counts of yarns best adapted for different gauges are as follows:

2s heaviest—4s lightest or a 4 cut machine.

5s heaviest—7s lightest or a 6 cut machine.

7s heaviest—10s lightest or an 8 cut machine.

12s heaviest—18s lightest or a 12 cut machine.

As a rule a knitter knows by experience what the gauge or needle is because very few knitters have a wire or needle gauge to measure the gauge by. A 12 gauge needle would be quite thick and if it had a 12 gauge hook on it would be in proportion to the thickness of the needle, but if the 12 gauge needle should have an 18 gauge hook, it could readily be distinguished because of the hook being so much smaller than the rest of the needle.

In running from heavy to light counts of yarn it is always advisable to have the cylinder needle, both hook and needle, one gauge, but the dial needles can be made with a finer hook than the cylinder needle. The reason for this is that if it is desired to change from heavy to light goods, the dial stitch can be made tighter and produce a finer knit fabric than if the dial needle was the same gauge of hook as the cylinder needle. For example, on a 36 gauge cylinder the dial should have a 36 gauge needle with a 42 gauge hook, and the same proportion in the different gauges, which enables one to change from light to heavy yarn without having to change the cylinder or dial needle to do so. Laramie.

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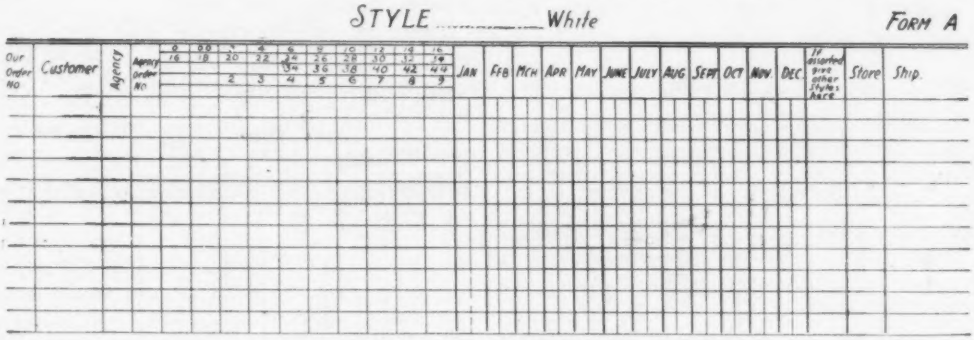
EFFICIENT MANAGEMENT IN KNITTING MILLS

BY CASSANDRA

In bringing forward the claims of "Scientific Management" no apology should be necessary, but like all departures from the old methods of procedure, it is often looked upon with suspicion, and often cast aside without much thought as to its merit or otherwise. What it has done and is doing in other spheres of manufacturing, it can surely do in the knitting line.

"Efficient Management" when brought forward some years ago by F. W. Taylor, was looked upon in anything but a kindly spirit by both master and workman, by the former, probably owing to cost of introduc-

tion and liability of labor disputes, and by the latter as it demanded more and better work. Yet it is doubtful if these men, now thoroughly conversant with its workings and benefits, could be induced to work under old conditions, both parties being satisfied as to the equity of "efficient" methods, the cost of production lowered and the wages standard higher. It has also done much towards eliminating troubles of one kind or another, resulting in a better feeling between employer and employe. These facts being demonstrated, can we in the knitting business afford to refuse investigation?



Many are the pros and cons entering into the establishment of efficiency methods. Firstly it means outlay of capital, the amount depending upon methods (if any) in force. Secondly, the rearranging of the plant to insure the best results. Thirdly, months, probably, of careful study and observation of the work before a move is made in the right direction. Again there is the opposition of some of the help to be overcome, as they do not willingly assist or aid in the establishment of new methods, even when it means much to them financially. With patience these obstacles can be overcome and a healthier business results.

The average employe gives just as little as possible in return for the amount of remuneration obtained and by the same trend of reasoning the employer extracts just as much as he can, with the resultant feeling of dissatisfaction on both sides. The workman goes home feeling he is underpaid for his work and the manufacturer has the feeling that that man has not earned his pay. There is but one way of overcoming this difficulty satisfactorily and the way leads to efficiency methods. Let us analyze for a moment just how efficiency will and does help. We are enabled to gauge with the certainty that humanity can make certain, just the actual amount of time required to perform a task. It may be we think the worker takes too much time over a certain job, and maybe he does, but it is just as possible we have but a very casual knowledge of what is required to complete the work, and the employe is getting through the operation expeditiously. This lack of accurate knowledge saps more of the vitality of any business than is generally believed.

Without regard to the difficulty or ease of an operation, standardize it, demand to know just what there is to it, and do not accept the knowledge from a foreman as a fact to be relied upon. He usually is guided by "rule of thumb" and not by actual fact. The operator then knows your knowledge of operation or operations is not guess work, but the result of observation covering a period. According to the nature of the work, they will also be better acquainted with themselves, as few operators really know their own capacity for work. Do not think for one moment the method tends to become what may be called a "driving" one, far from it, nor does it remove initiative from the help. There is always scope for that class of people under efficiency methods.

Under present conditions, some part of labor is done without remuneration (this applies especially to piece workers) and much being paid for that is never done. Under efficient management every little detail is arranged with the utmost care. The wheel of production turns smoothly, but what is required to continue the operation is always ready; no need to wait, everything has been planned out just enough ahead of time to prevent congestion at any point. Piece

Form B

Messrs _____

_____

Customers Order No. _____ _____

Ship _____ Via. _____

_____

Box _____ Label _____

Special No. _____ Our order No.

Style	0 16	00 18	2 20 2	4 22 3	6 24 4	8 26 5	10 28 6	12 30 7	14 32 8	16 34 9

Account of _____ Completed by Knitter _____

Terms _____ Completed by Cutter _____

Completed by Finisher _____

Completed by Shipper _____

Case No. _____

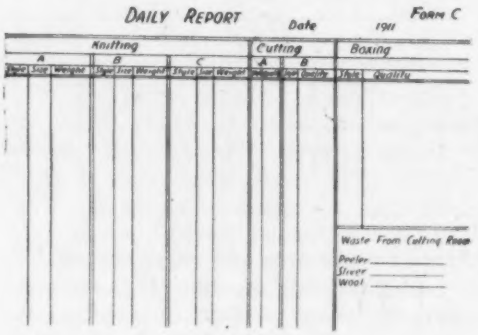
workers are not waiting whilst your power is running. Therefore, every minute they are in the plant they are earning and where such conditions prevail, the help will approve the system.

It has often occurred to the writer how many manufacturers can say within 10 or 15 per cent. the productive capacity of an operator. They probably do know what is done, but not what can be done under conditions brought about by efficient methods. It would prove a very interesting study, as well as a beneficent one, if manufacturers would test the fact.

Now regarding the day help around a mill, it is sometimes surprising to the manufacturer that it takes so many and they always appear busy and occupied. It might also be surprising were he able to follow the day help in his plant for a whole day and learn just how much work is done by each man.

The writer is conversant enough with Profit and Loss account to know what a strong bearing this surplus of day help has on it at the end of the financial year. A manufacturer goes to considerable trouble to buy his raw material right and to see that he gets what he pays for in quantity as well as quality. Is there any logical difference between material and labor?

There is an impression amongst some workmen that their production must be kept down to a certain quantity or the piece rate



will be "slashed." Under efficiency methods a fair and equitable rate is ascertained and should be adhered to rigidly by the employer. Stand by it, posting notices on the bulletin boards that the rate is guaranteed for a given period, say one year, provided the operation remains unchanged and they stand aside and watch production go up.

Having secured the good will and cooperation of foremen and operators, ascertain that other conditions, such as light and equipment are satisfactory, that the arrangement of the departments is such as to guarantee a continuity of the work, avoiding the necessity of trucking back and forth, or handling the goods more than is actually necessary. Taking it for granted that conditions are as well as can be made, take the best means at hand of fixing piece rates.

Let it be the sole care of a competent man; give him full authority. He will study and observe carefully how things are done, keep accurate reports of operations one by one, spending as much time as is considered necessary with each operation, observing and noting stoppages and causes thereof and duration, taking steps to remove these stoppages and a hundred and one things he will be called upon to determine the proper time to do a certain piece of work. So it will be seen that every step, even to the smallest detail, will be studied and observed, and when these observations are complete, you can fix your piece rate, which cannot but be fair to both and you can then stand behind it in the manner already suggested.

The same general plan can be worked out from the raw material to the finished product. It will take time, months, perhaps, but when completed, you will be astounded how smoothly the plant is running. The method is good so long as its principles are observed and it is up to the management to insist on its observance.

Last, but not least, the office part must be standardized too, as it is often the fault of the office that production is held captive, no yarn or no this or that forgotten. Efficiency does not forget, cannot overlook.

From the manufacturing point of view, the forms A, B and C have been found satisfactory with the addition of a "trimmings" record which can be drawn up to cover any particular line of business.

On receipt of an order a factory number is given it, and is known by such number alone during its progress through the plant. Full particulars of quantity and style are entered on Form A, a sheet being used for each style and garment, namely, shirts and vests on separate sheets, as also pants and drawers, with month and date due for delivery. The extra column under the month is used as a check mark space by the office when order has been put into process, and the other columns are self explanatory. When the order is to be issued for manufacturing, enter same on form B, making out 5 copies in all. The original upon which terms and other particulars not necessary for other departments is retained by the office, the others being passed to the knitting, cutting, finishing and shipping departments, who return them to the office to be filed, immediately these goods have passed to the other departments. Consequently the management can tell at a glance in which department the goods are, as the dates of completion given by the various foremen are entered on the original and the shipper completes by giving case number on his sheet when packed. This eliminates all guess work in regard to the order, and if kept as it should be, ought to prove of considerable help.

Form C needs no explanation. Keep a daily record of each department's output. It will tell you your weak departments, if there are any.

The record to be kept of "trimmings" is a very particular one. Firstly, determine just how much binding, buttons and the rest of articles required per dozen per style, and keep accurate record of stock on hand, taking same daily. Be guided by the orders due at certain dates as per Form A, allowing a percentage for rush orders and you will not often fall short. This book is manifold in its usages—and benefits—it not only tends to keep your stock up to level, neither too high nor low, but by its means you can ascertain how much of your material goes into the garment, how much to waste and how much finds its way into other doubtful channels. It will more than repay for the time expended in its upkeep and no manufacturer should overlook the value of accurate records, as it means much to their success.

In 1909 Spain exported 2,581,845 pounds of underwear valued at $2,587,714, 220,827 pounds of hosiery and gloves valued at $276,630. The imports of these goods amounted to $255,192.

The United Kingdom sells annually in Turkey upwards of 400,000,000 yards of cotton piece goods valued at about $22,456,700. The sales to Egypt in 1910 were 286,677,300 yards of cotton piece goods valued at $16,713,238.

Dyeing, Bleaching, Finishing, Etc.

FIREPROOFING OF WOVEN FABRICS

BY DR. LOUIS J. MATOS

The art of rendering fabrics proof against burning, or more strictly, against breaking into flame when ignited, has not received the attention the subject deserves. As a matter of fact it is practically impossible so to treat textiles that they will not burn, but by proper means they may be rendered so fire-resisting that they will not inflame, which is all that can be reasonably expected.

The general classes of fabrics that are most liable to ignite and burn rapidly are light and medium draperies commonly employed in interior decorations, and the usual run of filmy dress stuffs for women's and children's wear, which are mostly made of cotton.

To "fireproof" any textile fabric requires that it should be treated with some chemical substance that is not easily removed from the goods when dry, and which, when in contact with heat, is not easily volatilized. Among the substances most commonly used for this purpose are the following: borax, phosphate of ammonia, alkaline silicates (water gloss), soluble tungsten salts, titanium salts, and sulphate of ammonia. Many other salts have been recommended, but the above list includes those which have been found by thorough trials to be the most important.

Perhaps the most frequently caused fire in residences is due to lace curtains becoming ignited, and for this reason all such fabrics should be rendered as nearly non-inflammable as possible by immersion to saturation in a solution prepared as follows:

Carbonate of Ammonia	lbs. 14
Sulphate of Ammonia	lbs. 50
Boric Acid	lbs. 35
Dextrine	lbs. 2

The whole dissolved in 100 gallons of water.

After the goods have been immersed in this solution for some time, usually half an hour suffices, they are removed, wrung out and dried, after which they may be calendered. Thin and gauzy fabrics subjected to the above treatment will not inflame, and furthermore will not smoulder. As soon as the igniting match or flame is withdrawn, the fire at once becomes extinguished by the vapors arising from the two ammonia salts that are present. Another formula, very similar to the above, is made by substituting 15 pounds of common borax for an equivalent amount of boric acid.

The use of stannate of soda has been recommended as a fireproofing material for textiles, but it does not appear to offer any advantages over the chemicals above named. The most used chemical salt for fireproofing is tungstate of soda, a substance obtained indirectly from the mineral Wulfram by fusing with soda ash and subsequent crystallizing. It dissolves in four parts of cold water, and such a solution has no action whatever on either the colors with which a fabric is dyed, or the fabric itself. For the goods that are to be given a finish, tungstate of soda is of importance in that it may be incorporated with a suitable sizing or finishing compound. The following formula is the result of considerable experimenting, and has been found in practice to give not only a very good finish to the fabric (window nets, lace curtains, etc.), but that it was a most effective flame retarding agent. It is compounded by incorporating starch, tungstate of soda and borax together in the following proportions:

Starch	lbs. 10
Tungstate of Soda	lbs. 5
Borax	lbs. 3

The starch is first made into a cream with cold water and afterwards a sufficient quantity of water is added, and the solution stirred, while the entire mass is worked into a paste of sufficient consistency to be applied to the fabrics, when the tungstate and borax are added, stirring continued until the

solution is complete. It is applied in the usual way for sizes.

A process making use of titanium salts has also been used, yielding good results. The goods to be "proofed" are immersed in a solution of stannate of soda standing at 1.04 specific gravity until thoroughly saturated, and then dried, after which the goods are run through a solution containing 1 pound of titanium oxalate per gallon. The material is again dried and then passed through a bath of silicate of soda standing at 1.10 specific gravity, when it is washed and finally dried.

While a search of the records of the patent office will reveal a great number of compositions, a practical trial will readily demonstrate the utility of the soluble salts of tungsten over almost every other material suggested. The writer has conducted a very long series of trials with chemical salts of various degrees of solubility and of different strengths and finds that commercial sodium tungstate and ammonia sulphate in combination produce the ideal mixture for fireproofing the general run of textiles employed in household decoration and also for wear. Of course, if light summer dresses are to be "proofed," the amount of dry sodium tungstate to allow remaining on the material would be much less than for hangings. The main point always to keep in mind is to use only enough of the substance as will prevent the goods from bursting into flame.

Fireproofing of heavy textiles may also be effected by impregnating the fabrics, which may be of canvas, with a hot solution of tungstate of soda and allowing it to dry and then paint it with an ordinary paint of suitable color, or apply a special paint which, while not absolutely non burning, will not inflame. Such a paint used for theatre decorations is as follows:

To 25 gallons of linseed oil, add 20 pounds of litharge and 4 pounds sugar of lead in fine powder, boil with steady stirring, until the sugar of lead has disappeared; then add 1 pound of umber, 3/4 pound vegetable wax, 2 3/4 pounds powdered soap, and 9 pounds lamp black. Incorporate thoroughly and as it cools, add 1 gallon of equal parts rubber varnish and spirits of turpentine.

This paint is applied by brushing, and is allowed to oxidize for a couple of days to become thoroughly dry. It appears almost absurd to recommend a linseed oil paint as a fireproofing agent, but after this paint has been applied and become dry, it contains nearly 25 per cent. of mineral substance which materially acts as a flame retarding medium, and when painted over a tungstated fabric, the possibility of burning rapidly is very remote.

No means of chemically treating animal or vegetable fabrics will ever impart the fireproof quality possessed by asbestos, but it is quite possible to treat ordinary textiles in such a way as to prevent actual flaming, which is, after all, the condition sought.

For ordinary textiles, the ideal method is to take the goods as they come from the loom, and boil them out to remove all weave room dirt, dye them if necessary, and either impregnate them with a simple tungstate solution, and finish, or impregnate with tungsten and coat with a thin protecting coat of "varnish" made with silicate of soda.

As a rule, for domestic curtains or light dress goods, the tungsten is best applied by adding a solution of the salt to the last rinse water, and without any further treatment they are dried and ironed.

BLEACHING WASTE YARN

Editor Textile World Record:

I enclose a sample of waste yarns and would like to get a good formula for bleaching them as white as sample marked "A," as I wish to garnett them for quilt purposes. Bleacher (1941).

This yarn cannot be bleached by any process to such a degree of whiteness as shown by the white (undyed) sample accompanying, for the reason that the yarn in question, being waste yarn, has been previously dyed by various dyestuffs of very widely differing chemical properties, so that a particular stripping process might act on one of the colors without having any action whatever upon any of the others.

The United State's consumption of silk has nearly doubled itself in the last ten years, having risen from 11,500,000 to 22,000,000 lbs., in that period.

MONOPOLE OILS

BY J. MERRITT MATTHEWS, PH. D.

The general class of soluble oils, including Turkey red oils, Oleine oils, and various articles of this same character marketed under proprietary names, have long held an established position in the textile industries. They find a large use in printing, dyeing and finishing, especially in relation to cotton and silk.

Probably the most decided advance which has been made in the manufacture of oils of this general character is that accomplished by Dr. A. Schmitz of Heerdt, Germany, in the preparation of certain products known as Monopole oils. These have come into wide use of late years, and are especially desirable for a considerable range of application. While they have the same general properties of soluble oils as a class, they possess additional characteristics which much enhance their value for use in various branches of the textile industry.

As is well known, Turkey red oil in its strict meaning, is a product obtained by sulphonation of castor oil. By this is meant that the castor oil (which like other vegetable oils is totally insoluble in water) is acted upon by strong sulphuric acid with which it combines to yield a definite compound. This product is then freed from excess of acid by proper washing or treatment with alkali until the product is of a neutral character.

In the manufacture of Monopole oil, however, further operations are carried on which serve to sharply differentiate this product from Turkey red oil. The sulphonated oil, after being freed from excess of acid, is boiled for a long time with water, which has the effect of decomposing the sulphuric acid compound of the oil in such a manner that the acid is completely disengaged and a fatty oxy-acid compound of the oil is obtained. This latter is completely insoluble in water. This compound is then mixed with a further quantity of castor oil, with which it is heated for some time. It is then allowed to cool, and is again sulphonated with sulphuric acid in the usual manner, after which it is washed with water or alkaline water in order to remove all excess of acid, and the result is that a neutral soluble oil is obtained which contains a high percentage of fats.

There are several features of Monopole oil which recommend it as advantageous over Turkey red oils, olein oils, etc. In the first place, it has a relatively high percentage of fats. Turkey red oils and other soluble oils usually contain from 30 to 50 per cent. of fats, depending upon the purity and value of the product, whereas Monopole oil contains 50 to 75 per cent. of fats. Another advantage of Monopole oil is its great solubility in water. It is not only soluble in warm or hot water, but is furthermore readily and completely soluble in cold water.

The distinguishing characteristic, however, which gives a value to Monopole oil over other soluble oils is the fact that it does not form a precipitate with lime in calcareous water. This property permits of the use of Monopole oil for purposes to which Turkey red oils and other soluble oils would not be suitable. For purposes of machine dyeing, such as the dyeing of cops, cheeses, etc., the use of Monopole oil is almost indispensable in order to obtain even and thoroughly penetrated dyeings. Owing to the fact that Monopole oil is not of a resinous or sticky nature, the yarn after dyeing is soft and lustrous with an agreeable handle. The fault of Turkey red oils in this connection is that the yarn after dyeing retains a sticky feel, due without doubt to the insoluble lime soaps which filter into the fiber. A number of Turkey red oils and other cheaper soluble oils are characterized by a strong odor, the residue of which is always to be detected in yarns which have been treated with such oils. Monopole oil is remarkably free from odor of any kind.

For the usual dyeing of direct colors on cotton materials, Monopole oil is an invaluable adjunct. It may be added to the dye bath directly as the presence of the dyestuff and other materials which may be employed as accessories to the dye bath, such as Glauber's salt, phosphate of soda, borax, soap, soda, etc., have no effect on the oil. The use of the Monopole oil in this connection

causes the cotton to be very quickly and evenly wet-out even when the dye liquor is comparatively cold. The wetting-out is almost instantaneous when the dye liquor is near the boil. The presence of the oil in the dye bath also causes a much more even distribution of the colors and a very thorough penetration through the fiber. More color is also fixed on the fiber, and the material is left in a clean, soft condition. The presence of the oil in the dye bath also increases very considerably the luster of the fiber and the brilliancy of the color. For the production of these effects, it is only necessary to employ a relatively small amount of the oil. The present writer has obtained very excellent results with a proportion of about one pint of the Monopole oil to 100 gallons of dye liquor. This amount is for the starting bath and for succeeding baths only about one-half pint need be added. Not only is the use of Monopole oil advantageous in the dyeing of cotton, but it is equally so in the dyeing of linen, ramie, jute, silk, wool and artificial silk, union goods and half-silk material.

In the case of silk dyeing, Monopole oil can be used with great advantage for purposes of brightening, taking the place of oil and alkali used for emulsifying. No addition of alkali need be made as the Monopole oil does not require to be emulsified, being perfectly soluble.

Turkey red oils, and in fact all soluble oils in general, have the characteristic property of dissolving the pectin matters present in cotton and other vegetable fibers. On this account such oils are extensively employed for the purpose of boiling-out these fibers previous to bleaching. The oil is usually mixed with the alkali employed in boiling-out kier. Monopole oil is especially adapted for this purpose, as it very quickly and completely dissolves the resinous and pectin matters present in the vegetable fibers; it has the added advantage, however, over the ordinary soluble oils in that it does not form insoluble compounds with either the impurities in the cotton or those in the water which is used in the kier. Very often trouble has been experienced in boiling-out cotton or linen for bleaching when soluble oils are used in the kier, sticky, insoluble products being formed which are very difficult to remove from the fiber. Monopole oil does not show this defect. It also does not leave any odor in the fiber.

For the brightening of sulphur blacks dyed on cotton it is customary to use as an after-treatment a bath containing soluble oil or an emulsion prepared by boiling a vegetable oil (such as olive oil) with soda ash or borax. When Monopole oil is used in this connection its lustering and brightening effect is very marked, nor does it leave the cotton in an oily condition, such as is often the case with the ordinary soluble oils or emulsified oils.

In the operations of finishing and sizing, Monopole oil has an extensive use, its solution in water mixes perfectly with all manner of finishing and sizing ingredients, such as starches, flour, tragacanth, dextrine, the various vegetable gums, glue, etc. It is said to be about twice as efficient as the ordinary finishing oils, that is to say, only one-half as much of Monopole oil need be employed. The oil, of course, is added to the finishing and sizing pastes for the purpose of giving smoothness, softness and brightness to the cloth. The odorless quality of Monopole oil is especially advantageous in this connection.

As an adjunct to the mercerizing of cotton yarns and piece goods, Monopole oil is of very great value. As is well known, in mercerizing it is highly desirable to obtain the cotton in a very absorbent condition before it is treated with the mercerizing lye, which is a highly concentrated solution of caustic soda. If the cotton is first wetted-out by boiling in a solution of Monopole oil previous to the treatment with the caustic alkali, it will be found to absorb the mercerizing liquor much more rapidly and thoroughly than when boiled out by the usual processes. It can also be employed for the finishing of mercerized goods to alleviate the harshness which the fiber acquires in the mercerizing process.

Another advantageous use for Monopole oil is in the bleaching of fine cottons or mixed wool and cotton goods with peroxide baths containing either hydrogen peroxide or sodium peroxide. A small amount of the Monopole oil is added directly to the bleaching bath, and as it is perfectly soluble in the cold or slightly warmed liquor and is not precipitated by the ingredients therein nor by the hardness which may exist in the water, it has an efficiency which can hardly be attained by Turkey red oils or other soluble oils. Its use in the bleaching baths aids very considerably the penetration of the bleaching liquor, and thus conserves the bleaching activity of the bath to its fullest extent.

The use of Monopole oil in connection with the boiling-off process in the dyeing and bleaching of silk has been found to be very advantageous. As is well known, the boiling-off of silk is for the purpose of removing the silk glue or sericin from the fiber proper or fibroin. This is usually accomplished by boiling the silk in a strong soap bath and then thoroughly washing. It is really not of advantage, however, to remove all of the silk glue, as if this is done the fine silk fiber becomes liberated and is difficult to handle in the subsequent bleaching and dyeing operations. It has been found that by substituting some of the soap used in the boiling-off with Monopole oil, the boiling-off operation can be so regulated that a small portion of the original silk glue is left on the fiber and thus acts as a protecting layer against the disintegration of the fine silk filaments during bleaching and dyeing. As the inner layer of the silk glue which is thus left on the fiber is slowly dissolved in warm water it is eventually removed in the dyeing operations, so that when finished the silk is in the same soft condition as if it had been completely boiled-off in the first place; yet the physical condition of the fiber is far more perfect. A practical working formula for the use of Monopole oil in the boiling-off of silk is as follows:

100 gals. Water.
6 lbs. Soap.
4 lbs. Monopole Oil.
7 ozs. Ammonia 26° Tw.

Silk dyers have very largely adopted this method of boiling-off, as the luster, strength and scroop of the silk which has been treated in this manner is found to be superior to silk which has been boiled-off in the old manner with the use of soap alone.

CHLORINATION OF WOOLEN GOODS

BY E. LODGE

Before the Huddersfield Technical College

(Continued from November.)

Up to the present time we are unable to state upon demonstrative authority, what is the true action of chlorine upon wool. On account of the fact that several oxidizing reagents produce somewhat analogous results, it is generally assumed that the action is one of oxidation and not one of chlorination, as the name would imply. Recent researches point to the possibility of some chloramine derivative being produced. Chemically the wool has lost much of its active reducing properties; it is more reactive to chemical tests. Physically the wool is smoother; the irregular edges of the scales of the fiber being rounded off, or smoothed over, giving the fibers more the appearance of rod than of a true wool fiber. The handle of the fiber is hard, "harsh," or "scroopy." It is more lustrous and transparent. Chlorinated fibers easily wet-out, and there is a loss of about 3 per cent. in weight.

Up to the present time our knowledge of the new properties acquired by wool on chlorination may be summarized as follows:

1. It has lost its reducing properties.
2. Acquired a greatly increased attraction for coloring matter and metallic compounds.
3. Lost its capacity for felting.
4. Become more lustrous and transparent.
5. Acquired a scroopy feel.
6. Become yellow by hypochlorites and acids.
7. Electrical properties developed.
8. Increase in strength.
9. When chlorinated in alkaline solution

the wool becomes partially resistant to many dyestuffs.

Fiebigar states that the gain in strength of a 2/28 yarn is 9.9 per cent. and the same yarn gained in extensibility 10 per cent. Mr. Armitage found a woolen yarn to have increased in strength 12.2 per cent. He also found the same yarn to have much increased in stretching properties. I should like to emphasize here the fact, that although on proper and careful treatment there is undoubtedly an increase in strength—an over treatment tenders the fiber; in fact the fiber can be completely disintegrated by the use of an excess of chlorine or hypochlorite. I am given to understand that garments made from chlorinated wool do not wear so well as untreated material, a possible explanation of this state of affairs may be, that owing to the felting properties being destroyed the goods will always present the same place to any stress or tension the garment is subjected during wear. Whereas, ordinary woolen garments will constantly be presenting fresh parts on account of the shrinkage due to the unimpaired felting properties. On washing unshrinkable garments, the friction will tend to open or separate the fibers, while with ordinary wool the washing tends to felt or mill the goods, and so increase the thickness, with a corresponding shrinkage. The goods may be tendered by over treatment.

Chlorination is utilized for:

1. Dyeing wool or wool and cotton unions aniline black.
2. Printing wool or wool and cotton unions.
3. Producing gloss and scroopy feel.
4. Producing unshrinkable all wool goods.

The two latter may be of sufficient interest to warrant a short description of the methods adopted in practice to produce a silky gloss and scroopy feel. Treat the clean and thoroughly wet yarn for 15 minutes in a bath containing 18 lbs. of hydrochloric acid per 100 gals. (1,000 lbs.) of water. Lift out of bath and lightly squeeze, or extract. Then work for half an hour in cold bleaching powder solution prepared with 15.20 per cent. of the powder calculated on the weight of the yarn.

Although it was generally known that chlorine gas had a similar influence on wool, as that of an acid solution of bleaching powder, it was not until 1892 that Messrs. Knecht & Milnes first published a detailed account of the influence of this gas upon the wool fiber. They found that dry chlorine had no action upon dry wool, but if the wool was damp the chlorine was greedily absorbed, heat being generated and hydrochloric acid evolved, and that, if the action was allowed to proceed the fiber was completely disintegrated, forming a pulpy mass. If, however, a limited amount of chlorine was allowed to act, the fiber was found to have acquired all the properties possessed by wool chlorinated by the hypochlorite and acid method, but without the disadvantage of yellowing the fiber. Experiments have demonstrated that wool will absorb about 10 per cent. by weight of chlorine gas. For practical purposes 8 per cent. is the maximum and 1 1/2 per cent. the minimum amounts to produce any useful results. Meister, Lucius & Bruning confirm Knecht & Milnes' observation. They also point out that the rapidity of absorption is regulated by (1) the dampness of the wool; (2) by the concentration of the chlorine. They claim the dilution of the chlorine gas by admixture with air, which when properly regulated ensures evenness of chlorination, and no yellowing of the wool. By printing a pattern or design on piece goods, with some hygroscopic substance, and then exposure to chlorine gas, chlorination occurs on the printed parts, which on dyeing take up more color than the untreated section, giving a dark and light "fancy."

The disagreeable nature of chlorine gas, and the difficulties of handling, will, I am afraid, act against the general use of this method of chlorination. Solutions of chlorine gas have a similar action to the gas.

(To be continued.)

The exports of American cotton aggregate 7,759,000 bales, against 6,327,000 bales in 1908-09.

Dye Recipes

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

Recipe No. 177

VIOLET ON COTTON YARN

Thio Indigo Violet 2 B on 100 lbs. cotton yarn. First prepare the following stock vat with

10 lbs. Thio Indigo Violet 2 B.
(Kalle & Co., 530 Canal St., N. Y.)
4 pts. Caustic Soda Sol., 76° Tw.
10 gals. Water.
6 lbs. Puropol.
3 lbs. Hydrosulphite Powder Conc.

Stir the color with the given quantity of caustic soda. Then add to the water with continuous stirring. Then add the puropol and finally the hydrosulphite powder. Stir thoroughly and allow to stand at a temperature of 130°-140° F., until reduction is completed. This condition is indicated by a clear solution.

Next set the dye bath with the necessary amount of water and

2 ozs. Hydrosulphite Powder.
½ gal. Caustic Soda, 76° Tw.

Stir the bath thoroughly and after a period of from 1/4 to 1/2 hour add the stock solution of dyestuff. After the bath has been again stirred and stood for a few minutes, the dyeing is commenced at 85°-100° F., and continued at a temperature of 105° F., until the material has been evenly and thoroughly saturated with the solution. After dyeing, the material is wrung thoroughly and as strongly as possible and hung to oxidize for 15 minutes. It is then washed and soaped at a boil.

Thio Indigo Violet 2 B possesses excellent fastness to light, washing and acids, and will not rub.

Recipe No. 178

RED ON WORSTED YARN

Azerole Fast Red F on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Azerole Fast Red F.
(Innis, Speiden & Co., 46 Cliff St., N. Y.)
20 lbs. Glauber's Salt.
4 lbs. Sulphuric Acid.

Enter at 160° F., and dye at a boil for one hour.

Azerole Fast Red F is very fast to light and cross dyeing.

Recipe No. 179

BLUE ON WORSTED YARN

Xylene Blue V S on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Xylene Blue V S.
(F. E. Atteaux & Co., 174 Purchase St., Boston.)
20 lbs. Glauber's Salt.
4 lbs. Sulphuric Acid.

Enter at 120° F., raise to a boil and dye at a boil for one hour.

Xylene Blue V S possesses very good fastness to light, and will be found useful in the dyeing of piece goods.

Recipe No. 180

BLACK ON WORSTED YARN

Sulphon Cyanine Black 8 B on 100 lbs. worsted yarn. Prepare the dye bath with

5 lbs. Sulphon Cyanine Black 8 B.
(Farbenfabriken Co., 117 Hudson St., N. Y.)
20 lbs. Glauber's Salt Crystals.
5 lbs. Acetic Acid.

Enter at 120° F., raise slowly to a boil and dye at a boil until the bath is exhausted.

Sulphon Cyanine Black 8 B possesses very good fastness to light, washing and alkali.

Recipe No. 181

BLUE ON WORSTED PIECE GOODS

Alizarine Blue S R W on 100 lbs. worsted piece goods with silk stripes. Prepare the dye bath with

4 lbs. Alizarine Blue S R W.
(American Dyewood Co., 84 William St., N. Y.)
4 lbs. Ammonia, 26° Tw.

Enter the goods lukewarm and bring quickly to a boil. Add 6 lbs. of Acetic Acid and boil 40 minutes. Add 1 to 1 1/2 lbs. Oil of Vitriol and boil another half hour. Add half as much chrome as color and continue the boil a further half hour. Rinse.

Alizarine Blue S R W is a level dyeing product distinguished by extra fastness to light and the ability to color worsted goods with silk stripes, leaving the silk white.

Recipe No. 182

BROWN ON WORSTED PIECE GOODS

Alizarine Brown S B Conc. on 100 lbs. worsted piece goods with silk stripes. Prepare the dye bath with

4 lbs. Alizarine Brown S B Conc.
(American Dyewood Co., 84 William St., N. Y.)
4 lbs. Ammonia, 26° Tw.

Enter the goods lukewarm and bring quickly to a boil. Add

6 lbs. Acetic Acid

and boil 40 minutes. Add

1 to 1½ lbs. Oil of Vitriol and boil another half hour. Add half as much chrome as color and continue the boil a further half hour. Rinse.

Alizarine Brown S B Conc. is a level dyeing product distinguished by extra fastness to light and the ability to color worsted goods with silk stripes, leaving the silk white.

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Recipe No. 183

GREY ON COTTON YARN

Thio Indigo Grey 2 B on 100 lbs. cotton yarn. First prepare the following stock vat with

10 lbs. Thio Indigo Grey 2 B.
(Kalle & Co., 530 Canal St., N. Y.)
4 pts. Caustic Soda Solution, 76° Tw.
10 gals. Water.
4 lbs. Puropol.
4 lbs. Hydrosulphite Conc. Powder.

Stir the color with the given quantity of caustic soda. Then add to the water with continuous stirring. Then add the puropol and finally the hydrosulphite powder. Stir thoroughly and allow to stand at a temperature of 100° F., until the reduction is completed. This condition is indicated by a clear solution.

Next set the dye bath with the necessary amount of water and

2 ozs. Hydrosulphite Powder,
½ gal. Caustic Soda, 76° Tw.

Stir the bath thoroughly and after a period of from 1/4 to 1/2 hour add the stock solution of dyestuff. After the bath has been again stirred and stood a few minutes, the dyeing is commenced at 85°-100° F., and continued at a temperature of 105° F. until the material has been evenly and thoroughly saturated with the solution. After dyeing, the material is wrung thoroughly and strongly as possible, and hung to oxidize for 15 minutes. It is then washed and soaped at a boil.

Thio Indigo Grey 2 B possesses excellent fastness to light, washing, and acids, and will not rub.

Recipe No. 184

RED ON WORSTED YARN

Guinea Fast Red 2 R on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Guinea Fast Red 2 R.
(Berlin Aniline Works, 213 Water St., N. Y.)
4 lbs. Sulphuric Acid.
15 lbs. Glauber's Salt.

Enter at 160° F., and dye at a boil for one hour.

Guinea Fast Red 2 R produces a desirable and bright shade of red possessing the characteristic properties of the acid dyes.

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Recipe No. 185

RED ON WORSTED YARN

Brilliant Lanafuchsine B B on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Brilliant Lanafuchsine B B.
(Cassella Color Co., 182 Front St., N. Y.)
20 lbs. Glauber's Salt.
5 lbs. Sulphuric Acid.

Enter the material at 180° F., and dye at a boil for one hour.

Brilliant Lanafuchsine B B possesses excellent fastness to light, carbonizing and steaming.

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Recipe No. 186

BROWN ON WORSTED YARN

Oxy Chrome Brown V R on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Oxy Chrome Brown V R.
(Geisenheimer & Co., 189 Front St., N. Y.)
10 lbs. Glauber's Salt.
3 lbs. Acetic Acid.

Enter at 100°-120° F., and boil for 3/4 of an hour. Then add

1½ lbs. Sulphuric Acid

and boil for 1/2 hour longer. Shut off the steam and add

2 lbs. Potassium Bichromate.

Reenter the goods and boil for 3/4 of an hour longer.

Oxy Chrome Brown V R produces a desirable shade of brown possessing excellent fastness.

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Recipe No. 187

GREEN ON WORSTED YARN

Cyananthrol Fast Green G on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs Cyananthrol Fast Green G.
(Badische Co., 86 Federal St., Boston.)
3½ lbs. Sulphuric Acid.
15 lbs. Glauber's Salt.

Enter at 160° F., and dye at a boil for one hour.

Cyananthrol Fast Green G will be found sufficiently fast for ordinary requirements.

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Recipe No. 188

BROWN ON WORSTED YARN

Oxy Chrome Brown D on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Oxy Chrome Brown D.
(Geisenheimer & Co., 189 Front St., N. Y.)
10 lbs. Glauber's Salt.
3 lbs. Acetic Acid.

Enter at 100°-120° F., and boil for 3/4 of an hour. Then add

1½ lbs. Sulphuric Acid

and boil for 1/2 hour longer. Shut off the steam and add

2 lbs. Potassium Bichromate.

Reenter the goods and boil for 3/4 of an hour longer.

Oxy Chrome Brown D produces a desirable shade of brown possessing excellent fastness.

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Recipe No. 189

BLUE ON COTTON YARN

Dianil Brilliant Blue R on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Dianil Brilliant Blue R.
(H. A Metz & Co., 122 Hudson St., N. Y.)
30 lbs. Common Salt.
1 lb. Acetic Acid.

Dye at, or near, a boil for one hour.

Dianil Brilliant Blue R gives a very bright shade of blue.

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Recipe No. 190

VIOLET ON COTTON YARN

Indanthrene Violet R N Paste on 100 lbs. cotton yarn. To 200 gallons of water contained in a suitable dye vat add

4½ lbs. Soda Ash,
5 pts. Caustic Soda Sol., 76° Tw.

The bath is then heated to 120° F., and any lime scum which may have formed on the top is removed.

5 lbs. Hydrosulphite B A S F Conc. Powder

is then stirred into the dye bath, and

20 lbs. Indanthrene Violet R N Paste
(Badische Co., 86 Federal St., Boston.)

which has been stirred with ten times its quantity of hot water is added. It is well to add this mixture of water and dyestuff through a fine sieve.

30 lbs. Glauber's Salt

is then added, and the yarn which has been previously boiled out is entered, and dyed for one hour at a temperature of 120° F. The yarn is then lifted, allowed to drain for a short time, rinsed in a cold bath containing

3 lbs. Hydrosulphite B A S F Powder

to 200 gallons of water.

It is then thoroughly rinsed, soured in a bath containing

⅛ gal. Sulphuric Acid Conc.

to 200 gallons of water. It is then rinsed well and soaped at a boil.

Indanthrene Violet R N Paste possesses very good fastness to light, and its fastness to washing, milling, acids and alkalies is also good.

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Recipe No. 191

YELLOW ON WORSTED YARN

Fast Yellow V on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Fast Yellow V.
(F. E. Atteaux & Co., 174 Purchase St., Boston.)
20 lbs. Glauber's Salt
4 lbs. Sulphuric Acid.

Enter at 120° F., raise to a boil and dye at a boil for one hour.

Fast Yellow V possesses very good fastness to light, and will be found useful in the dyeing of piece goods.

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Recipe No. 192

RED ON WORSTED YARN

Alizarine Red S P on 100 lbs. Chrome Mordanted worsted yarn. First mordant the yarn in a bath made up with

3 lbs. Potassium Bichromate.
2 lbs. Tartar.

Enter at ordinary temperatures, bring slowly to a boil and mordant at a boil for 1 1/2 hours.

The dye bath is then made up with

3 lbs. Alizarine Red S P.
(C. Bischoff & Co., 451 Washington St., N. Y.)
1 lb. Acetic Acid.

The material is entered at 100° F., brought slowly to a boil, and dyed at a boil for 1 1/2 hours.

Alizarine Red S P is extremely fast to light and fulling, penetrates well, and dyes very level.

New Machinery and Processes

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to the textile manufacturers. It is not a list of patents but of improvements on the market, the idea being to present to our readers a systematic monthly record of new machinery, etc., of interest to textile mill men.

Whenever possible we endeavor to make a personal investigation of the new machinery and processes described in this department. In the absence of such personal investigation we must necessarily rely upon information obtained from those who control the machines and processes.

We invite machine builders and others to send us such information for this department.

Bobbin and Spool-Barrel Turning Lathe. The Defiance Machine Co., Defiance, O., are putting on the market a lathe especially designed for producing bobbins of all sizes and shapes, a description of which appears in this issue.

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New Dobby Motion. Lupton & Place, Burnley, England. An improved dobby motion which enables a great variety of patterns to be obtained.

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Backwashing Machine. Boldy & Son, Ltd., Bradford, England. A backwashing machine in which the liability of scorching is practically eliminated and owing to the more efficient drying obtained a better luster is secured, the yarn is softer and the material more lofty.

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Pirn Winder. Asa Lees & Co., Oldham, England, have recently brought out an improved form of pirn winder for making cross-wound cops on the bare spindle, pirn or tube. A separate yarn guide is provided for each spindle.

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Hand Threading Shuttle. Kirk & Co., Blackburn, England, have placed on the market a shuttle which can be threaded by hand, thus obviating the objectionable "shuttle kissing."

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Printing Machine. Mather & Platt, Manchester, England, have recently placed on the market a one-color printing machine for cloth, with which a high pressure is obtained, giving excellent results.

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Card Grinder. Hermann Bauer, Werdau, Saxony. A grinder especially adapted for grinding two card rollers at the same time.

Cotton Waste Card. The Saechsische Maschinenfabrik, Chemnitz, Germany, has recently placed on the market a cotton card consisting of a first breaker and finisher especially adapted for working cotton waste. It is built with either one or two doffers on the finisher.

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Dust Remover. Gregson Ventilating & Engineering Co., Great Harwood, England. A vacuum dust remover which consists of lengths of sheet steel tubing taken overhead the whole length of the card room.

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Collecting Comber Waste. John Hetherington & Sons, Ltd., Manchester, England. An attachment for comber machines whereby the production is increased and the quality of the waste greatly improved.

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Hank Swift. Young & Co., Belfast, Ireland, are putting on the market a new hank swift suitable for all kinds of winding machines and in which the yarn is wound from the hank on to bobbins, pirns, etc.

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Needle Setting Apparatus. Schubert & Salzer, Chemnitz, Germany. An apparatus for facilitating the work of setting and fastening the needles in the cylinders of circular combing machines.

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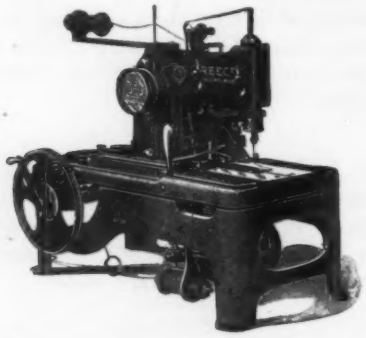
Let-Off Motion. Charles L. David, Reims, France. An improved let-off motion for looms by which the warp is delivered uniformly without slipping or being held back, as is often the case with many let-off motions.

THE REECE HAND-HOLE BUTTON-HOLE MACHINE

The illustration shows a new product of the Reece Button Hole Machine Co., 500 Harrison Ave., Boston, Mass., which is designed for stitching and cutting button holes in knit goods of all kinds, including sweaters, sweater coats, golf jackets, underwear, as well as for woolen clothing.

The machine is entirely automatic in all its movements, the material always being held



stationary, and the stitching mechanism travels around the button hole. The machine is easily adjusted to any width, bite or gauge without affecting the adjustment of the machine and the needle is self-setting. The high purl made with the machine gives a perfect imitation of a hand button hole which is claimed to wear better than any machine button hole yet produced. When operated with a coarse silk on the bottom, it is impossible to distinguish from a hand-made button hole. It can be made to run with any grade of silk or with any good cotton without trouble to the operator.

The Reece Button Hole Machine Co. are pioneers in this work and have had great experience in this class of machinery. They feel that with this new model machine, they have improved on their own record and produced a button hole machine that is a step in advance of anything hitherto on the market.

Some of the advantages claimed for this machine are as follows: It is very speedy and gives large production. The button hole is stronger, will wear better and looks and is better than a hand-made button hole; it is an easy matter to change to any length button hole required; until this machine was brought out, there were grades of goods where a machine button hole could not be worked on account of the goods raveling after being cut, but this machine does not cut the button hole until after it is worked in the goods, and it has been found by experience that it works equally well with any kind of material from the lightest to the heaviest. It is built in several sizes and types adapted to special work and the builders will be glad to furnish any information desired with reference to manufacturers' requirements.

A CORD KNITTING MACHINE

The illustration, Fig. 1, shows a circular machine for knitting cord such as used for

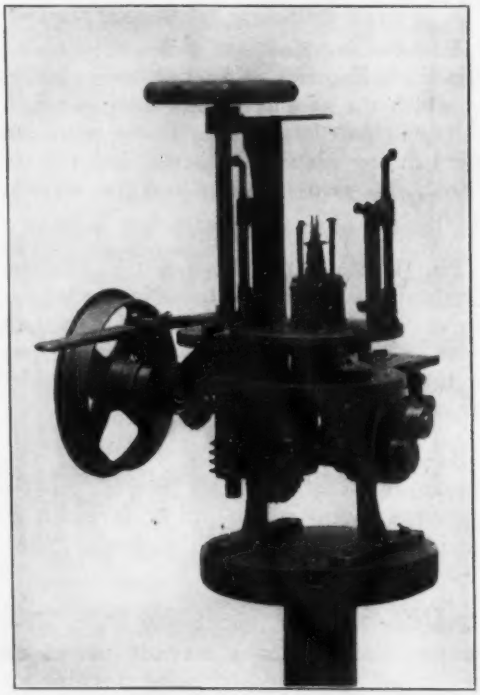


FIG. 1. A NEW CORD KNITTING MACHINE.

decorative or millinery purposes or upholstery work, taking the place of a spun or braided cord and giving a different and more varied effect.

The illustration, Fig. 2, shows one style of the cord. The core is composed of several strands of cotton cord and the knitted tube covers these strands, making a cord that is flexible, soft and free from kinks.

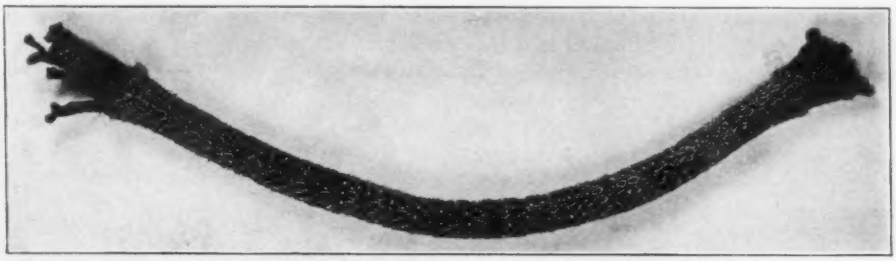


FIG. 2 ONE STYLE OF CORD MADE WITH CORD KNITTING MACHINE.

The machine makes cords ranging from 1/8 to 3/8 inch in diameter. This is accomplished by different sized cylinders with different number of needles. It does two-colored work and makes spiral and striped and mixed sample effects. It is a power machine, runs at high speed and gives a large production. The demand for something new in this line led the John Eppler Machine Works, 629 Filbert St., Philadelphia, to develop this machine and they report they have already received a number of orders and would be pleased to give information and send samples of the work.

BOBBIN AND SPOOL-BARREL TURNING LATHE

The illustration, Fig. 1, shows a lathe especially designed for producing bobbins of all sizes and shapes, as well as spool

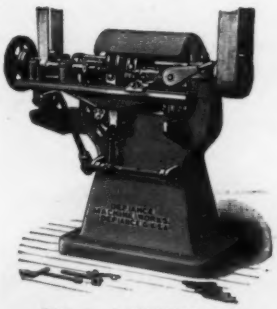


FIG. 1. A BOBBIN LATHE

beams of all kinds up to 7 inches in diameter and 18 inches long. The samples of the different styles made are shown at Fig. 2. The machine takes the rough material with square corners or otherwise and turns out the finished product complete in the exact

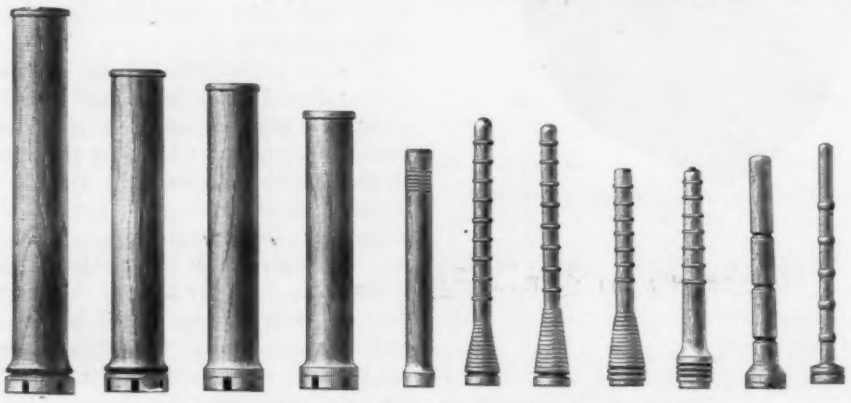


FIG. 2. DIFFERENT STYLES OF BOBBINS MADE ON BOBBIN LATHE.

In the 4,820 textile establishments in the United States in 1909 there were 861,621 persons employed with wages averaging $349,193,000.

size and shape, perfectly smooth and at the rate of about 5,000 pieces per day. Different heads and knives are required for different shapes of turning and can be quickly interchanged from one class of work to another. The work is placed in the machine in the usual way and slowly rotates as it is moved to the cutters. When finished it is automatically discharged from the machine. It requires about 2 h. p. to drive the machine which occupies a space of about 36 to 56 inches and weighs 1,600 pounds. It is built by the Defiance Machine Works, Defiance, O., from whom further information can be obtained.

THE BUFFALO "CONOIDAL" FAN

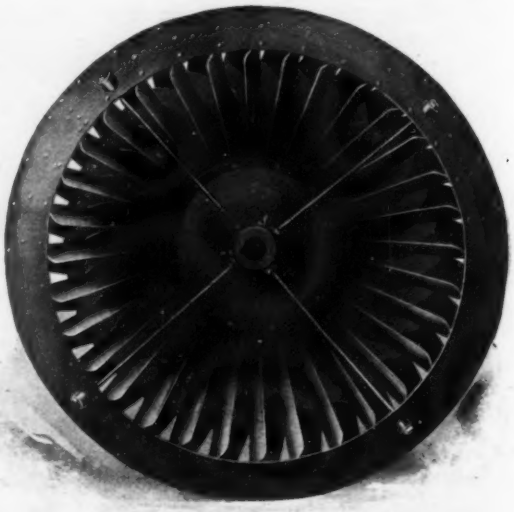
The Buffalo "Conoidal" Fan is a new type of multiblade fan, embodying principles which have been the subject of careful study for several years. When multiblade fans were first brought out, these principles were

"CONOIDAL" FAN—SIDE VIEW WITH CASING REMOVED.

not wholly known or clearly defined so that only partial advantage could be taken of their potential ability to move large volumes of air at low pressures.

The action of the multiblade fans is radically different from the centrifugal or standard type. The suction produced at the inlet tends to draw the air in, almost at right angles to the back or drive side. Striking the blade, it is suddenly deflected at an angle of nearly 90° toward the blades and outlet. This change in direction causes loss of power and velocity and irregularity in the distribution and pressure at the outlet.

The "Conoidal" Fan was designed to overcome these objections. It derives its



"CONOIDAL" FAN—END VIEW.

name from the prevalence of conical shapes in its design. The inlet is conical; the blast wheel forms the frustrum of a cone and the blades are curved over the tapering surface of a cone. The illustrations show this conical construction.

The "Conoidal" blades are narrow at the front, providing a large and unobstructed intake. They increase in width towards the back, causing part of the air to be taken up by them before striking the hub.

The hub itself is made conical to gently deflect the air toward the blades, without loss of power. The inner side of the blades at the back meet the base of the cone, taking up the air at a slow speed because of the small diameter. To offset this slower speed, the blade is made wide at the back, increasing the pressure; it decreases in width toward the front where its higher velocity (due to the greater diameter) produces a greater suction.

These effects have been carefully weighed with a view to obtaining absolute accuracy

in proportions, shape and position of blades. Without preventing the maximum amount of air being taken up in front, a uniform supply is secured at every point of the blade from front to back, and the air is delivered at a pressure which comes the closest to uniformity over the entire width of the outlet. The efficiency of this new type of fan has been demonstrated by numerous installations.

There are certain purposes for which multiblade fans are especially desirable, and there are other purposes for which the standard steel blade fan may be operated to better advantage. Advice on these points is freely offered by the engineers of the Buffalo Forge Co., Buffalo, N. Y., the builder of the "Conoidal" fan, with a view of recommending the best type and size of fan to meet the special conditions in each case.

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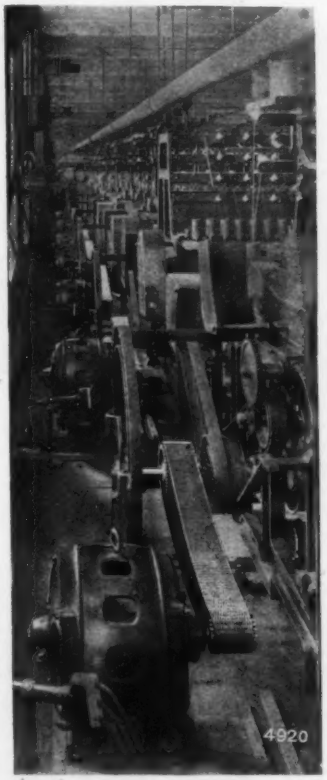
THE "MAXIMUM" SILENT CHAIN FOR TEXTILE MILLS

The merits of the chain drive have been generally recognized in the textile industry where the use of electric motors both for group drives and individual drives is very extensive and rapidly increasing. The chain drive makes the electric motor still more available. The illustrations show views of several installations of the "Maximum" silent chain for textile mills. This chain often makes possible the use of a motor which would otherwise be difficult without the chain. It is adaptable to mill conditions and gives the positive speed ratio of a gear drive without the noise or jar of metal gears and it has the flexible qualities of the leather belt without the slip. There are many textile operations that require constant speed, and the chain drive with its high efficiency and constant speed irrespective of load, gives a smooth, positive drive which results in maximum production and good quality. The Link Belt Co., Philadelphia, Pa., have been manufacturing "Maximum" silent chains for high speed power transmission in textile mills for ten years. The experimental stage has long since past and their engineers are able to specify exactly what is required to meet conditions and produce certain results. This chain is being used successfully on a great variety of textile machinery, including spinning frames, looms, pickers, nappers, twisters, tentering machines, winders, knitting machinery, fans, finishing machines, etc.



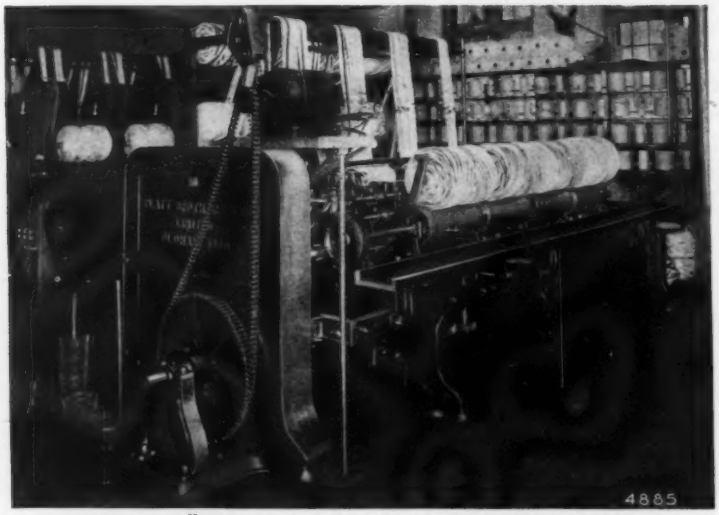
"MAXIMUM" SILENT CHAIN DRIVE OPERATING SPINNING FRAMES.

A special pamphlet has been issued on textile mill use, describing many different applications.

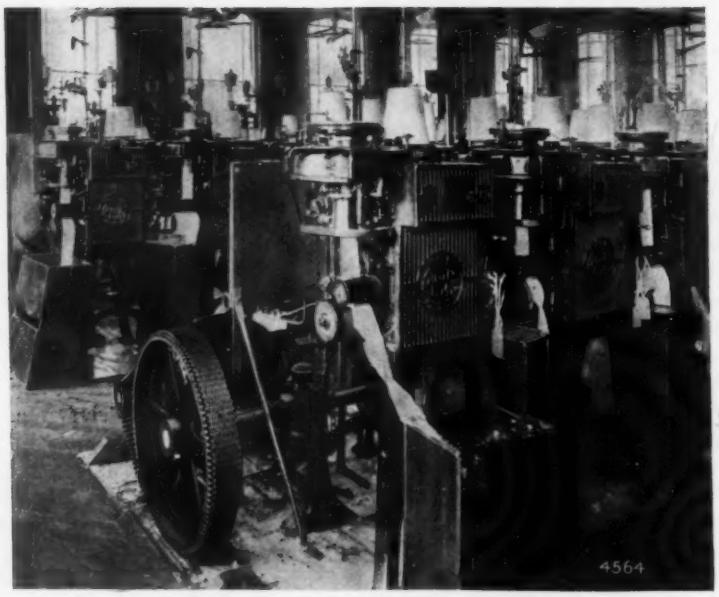
The illustration, Fig. 1, is a 5 h. p. "Maximum" silent chain drive operating spinning frames.

Fig. 2 is a 1 1/2 h. p. "Maximum" silent chain drive operating a worsted spinning machine, French system; the casing for driving has been removed.

Fig. 3 is a 5 h. p. "Maximum" silent chain drive operating a line of knitting machines. It will be noted that the machines are set very closely.



"MAXIMUM" SILENT CHAIN DRIVE OPERATING A WORSTED FRAME.



5 H. P. "MAXIMUM" SILENT CHAIN DRIVE OPERATING KNITTING MACHINES.

THE SOUTHERN TEXTILE ASSOCIATION

The semi-annual meeting of the Southern Textile Association was held on December 2 in Convention Hall of the Kimball Hotel at Atlanta, and was attended by a large number of members. This association discusses mill questions from a practical standpoint and some very excellent papers have been presented at its meetings. The program for this meeting provided for a one day's session only and the time was fully occupied.

After the call to order at 11 A. M., a formal welcome to Atlanta was extended and the response made by A. B. Carter of Athens. H. W. Atkinson's paper on "Weaving and Designing" completed the morning session.

The program for the afternoon session comprised papers as follows: "The Spinning Room," by Charles M. Stoy, Anniston, Ala. "Waste Reduction," by D. D. Towers, Canton, Ga. "Story of Coal Tar," by Prof. J. H. Halstead, West Raleigh, N. C. "Power Reduction by Alignment," by George W. Loggie of the Kinkead Mfg. Co., Boston, Mass. Mr. Loggie's paper on a similar subject presented at the Manchester Convention of the National Association of Cotton Manufacturers was published in a recent issue of this magazine.

The evening was given up to the social program, which was successfully carried out under the auspices of the local committee on entertainment.

The Southern Textile Association keeps clearly in mind the proper ideal of an association of practical mill men, combining the serious discussion of mill problems with the equally important purpose of promoting better acquaintance among the superintendents and overseers of the South and the inspiration that comes from the mingling together of men whose work is along the same lines. The present officers of the association are: M. G. Stone, Spartanburg, S. C., president; J. M. Davis, Newberry, S. C., first vice-president; T. B. Wallace, Greenville, S. C., second vice-president; J. S. Osteen, Greenville, S. C., third vice-president; E. E. Brown, Rockingham, N. C., fourth vice-president; G. S. Escott, Charlotte, N. C., secretary; David Clarke, Charlotte, N. C., treasurer; Z. H. Mangum, Gibson, N. C., chairman board of governors.

THE SPINNING ROOM

By CHARLES M. STOY, Anniston, Ala.

Read before Southern Textile Association, Atlanta, Ga., December 2, 1911.

Many people are of the opinion that the process of spinning starts when the roving is delivered to the ring frame, or mule, but in reality spinning has begun when the work has started through the slubber, for there the cotton receives its first twist. It is true that slubbing and intermediates and fly frames are called roving frames, for such they are, yet they spin and twist and double the yarn in its minor state, thereby preparing it for the final machine when it is drawn out and receives yarn twist in the spinning room.

In these roving spinning machines the quality of the yarn can easily be impaired or made almost worthless by several causes which do not arise in the spinning frame. The principal one of these causes is tension, which requires constant watchfulness and attention for the foundation of spinning is laid on these machines. It is a well known fact that the spinning room will run well if the roving is good. Dampness is one of the principal drawbacks to the work on these machines. Therefore I do not believe in using the humidifiers except in extreme changes, such as very warm dry, and cold, dry weather. In the first case the humidifier will cool the atmosphere; and in the second, by using warm water through them, it will do away with the electricity that is in the air, and give elasticity to the cotton. Except in cases as above described, I prefer to have them shut off in the card room as a sliver or strand of roving filled with moisture will, in all cases, drag back and give out more resistance than a dry one. Consequently there are more chances for strained or stretched roving as the strain, in most cases, arises when the roving is passing through the flyer and around the presser. It is easy to see that there is not as much drag as there is to roving which is full of moisture. Therefore, oftentimes when the fly frame appears to be running well it is making strained work.

Of course there are other things that will cause uneven roving besides the amount of moisture in a room. If the let off motion becomes choked or does not have on the proper tension gear, thereby decreasing the speed of the bobbins in proportion to each additional layer of roving that is put on them, the same result of strained work will arise —only to a greater extent. It is very essential and important that the tension on each one of these preparatory spinning frames should receive careful attention. The variation in numbers arises from several causes. Amongst the most common are the following: Damp stock; cotton not properly put in mixing room according to grade and length of staple; stock not properly opened up and mixed in opening room; using compressed

cotton along with uncompressed cotton; getting too much waste at times in the lap; allowing laps to run out on finisher, or lapping joints when laps are put on apron; laps—too heavy or too light—allowed to go to cards; split laps; single on drawing or roving frames; also, strained work caused by the frames not having the proper tension. If the stock is damp when fed into the opener, and the lap is run at the regular standard weight, a part of it is moisture; and, if the atmosphere is dry, as the work passes forward it will dry out and be light. If the atmosphere is damp it will retain the moisture, and when it comes to roving frames will be strained and stretched almost in spite of all one can do. It is then turned over to the spinner in a doubled, damaged condition. It is uneven and light. If you are using double roving, you may be able to make a poor quality of yarn out of it. If on single roving, it will be worse, for double roving is the only way that a spinner has to even up the strained places in the roving.

At the present time there are two forms of spinning machines in extensive use, viz., the ring frame and the mule. The mule is more commonly used in spinning hosiery yarns or filling and for very fine yarns, as there are no travelers used to chafe and strain the yarn, the mule being so arranged that the carriage carrying the spindles spins as it goes out and winds what it has spun on to its spindles as it returns to the roller beam. The roving is drawn through rolls as it done on the spinning frame, and the principle of draft and rollers is the same in both machines. The mule is very complicated, and requires much more floor space and power, and higher paid and more skilled class of operatives to operate same than the ring frame. Consequently the advantages are with the ring frame as follows: More spindles in a given area, cheaper help, and increased production per spindle up to about No. 150s yarn. As regards the increase per spindle of the ring frame, it is greater in producing the coarser yarns, but if the comparison is carried to very fine yarns, the advantage in production per spindle will be in favor of the mule. The point of numbers where the mule will take the lead in production over the ring frame is about No. 150s yarn.

The amount of twist in the yarn is an important factor in the relative production of the two machines. On account of its being possible to spin and wind yarn on a mule with less tension than on a ring frame, there is an advantage in using the mule for soft twisted yarns even of coarser numbers. Owing to the previously mentioned advantages of the ring frames, mills on the coarser numbers use them, as the cost of labor is nearly always in its favor, there being only occasional conditions when the mule could be said to lead.

In its action the ring frame is the simplest machine used in the manufacture of cotton yarns, and to obtain the best results it is necessary to have the rolls and spindles correctly set and in good condition. Spinners do not complain about roving having too much twist in it as long as it will draw well. If the rolls are properly set, even if the roving has a little too much twist, it will draw out smooth and even. The proper distance from center to center of rolls depends upon four conditions, viz.: The weight of the roving; the amount of twist; the draught; and the length of staple. As a general rule it is customary to have the centers of steel rolls set 1/8 inch farther apart than the length of the fiber. If the roving be heavy it requires a greater distance. If very light roving, a shorter distance. Excessive twist requires a greater distance than a soft twist. A short draught requires a greater distance from center to center of rolls than a long draught does. So, from this, it is shown that in order to get the best results the weight, twist, draught and length of staple must be considered.

In setting solid top rolls, I think it best to have the front roll set so that its center will come slightly forward of the center of the front steel roll—just enough to overcome the back pull of the stock being worked—so that the top roll will not rock back and forth in cap bar bearings, causing lumpy yarn. By setting just enough forward of the center to offset this back pull the full benefit of the cushion of the roll and weight on same is obtained, giving a better bite of the steel roll on the stock. If set too far forward of the center, a certain amount of weight is taken off of the stock which is passing between the two rolls, caused by two forces, namely: the forward movement of the roll, and the pressure of the weight which, in time, will wear a recess or notch in the nib where the end of top roll bears against it, which will then hold the roll tight in its socket and deprive the stock which is being drawn of a part of the benefit of the weight and cushion of the roll, thereby making uneven yarn. I have just taken out every nib on a section of frames which have been run in this way, and replaced with new ones and found that my work was wonderfully improved by the change.

One should use a good heavy oil on top rolls. I prefer AOO Non-Fluid, as it does not take but a drop to the bearing each day, and stays on, thereby giving a lasting lubricant.

Care should be taken that thread guides are kept properly set. Spindles should be plumbed to rings at bottom and top of traverse. Whenever it is necessary to replace a broken spindle base or bolster, have the section man plumb the spindle true to its proper running position before he leaves it. Keep ring rails level and rings down level in same, otherwise there will be an uneven tension on the yarn, causing the traveler to have more friction on one side of ring than the other, which will shorten the life of both traveler and ring. Have spindles oiled every two weeks with a good spindle oil. Care should be used in the making of bands so that each band will be the same size and have the same amount of twist. It is preferable to use good roving bands, as they will not stretch and make near so much soft yarn as the yarn band, for the reason that roving bands will fall off of whorl when same become slack or worn. The roving traverses should be set so that as near the whole boss of the top roll will be traversed by the roving as possible, thereby avoiding an uneven surface on top roll, a poor quality of yarn and a short lifed roll.

The proper weight traveler is a very important

factor in the production of good yarn, and also serves as a tension in winding the yarn on the bobbin. Unless the tension is good and regular the twist will not be even, and as a result irregularly twisted and weak yarn will be spun. The number or weight of travelers is dependent on seven conditions, viz.: Number of yarn being spun; speed of spindles; quality of staple of cotton; the amount of twist wanted; diameter of ring; round or square point travelers; and whether travelers be round or flat topped. Any one of these seven conditions altered will affect the proper weight of traveler needed. Therefore one can readily see that in order to get the right number of travelers for a certain number of yarn, he will have to make tests and judge for himself which traveler gives the best results. Separators should be kept level and well balanced. Frames should be leveled once a year and thoroughly inspected and overhauled. Steel rolls should be taken out and scoured once every six months, and all bearings examined, cleaned, and lubricated with a thick grease. Constant attention should be given weight-levers, and see that none drop down on lever board. It should also be borne in mind that after levers have been used for several years they will wear a notch where they hook into lever screw, which should be filed away, as it retards its action. It is always best to have medium drafts, as excessive drafts make weak and uneven yarn. Lifting rods should be kept clean and free from chokes. I find it a good idea to wash them off occasionally with gasoline or kerosene and use no lubricating oil on them, as they get enough oil from the fly of the spindles.

Builders and take-up motions should be examined frequently in order that they remain properly set so that they will give good results, otherwise a poorly built bobbin and tangle work will result, as this is one of the vital points in the production of the ring frame. Tangle yarn is not production of yarn, but production of waste, and it costs just as much to make waste as yarn. It is a costly policy to have a poor oiler and bander on the job, as the company will be the loser many times his wages. Spinners should be taught to keep rolls clean and frames in a tidy condition, and impressed with the fact that good work and smooth piecing of ends must be had. Doffers should doff frames as quickly as possible and break as few ends down in doffing as is practicable. The spinning room should have the best humidifier system that can be obtained, so that the atmosphere can be kept as near a standard degree of humidity and temperature as can be had, thereby imparting strength and elasticity to the yarn. Overseers, second hands and section men should treat the help in a kind, dignified way, avoiding partiality, familiarity, and abusive language. They should use eternal vigilance, and keep hustling. Always remembering that it is the little things that get production in the spinning room.

"LITTLE THINGS IN A MILL"

BY W. L. LOWRY

Read before the Southern Textile Association at the meeting in Atlanta.

Someone has said that if we look after the little things, the big things will take care of themselves, and in consideration of this fact, as applied to the manufacture of cotton goods, we will, I think, find this true to so great an extent that it is hard to be able to separate the little and the big things. In preparing an article of this kind it is not the intent or desire of the writer to set himself up as an authority on this subject, as probably no one present realizes his lack of ability more than himself. The subject has, however, been given very considerable study and attention during the writer's mill experience, and if anything herein contained shall be a help or benefit to anyone, it will not have been written in vain.

As we all know, there are certain of the cheaper grades of cotton goods, which on account of the price at which they are expected to be sold and the use for which they are intended, must needs be made out of a low grade cotton or waste, and to these goods some portions of this article will not apply. Also, from the nature of this paper, we shall have to deal primarily with plain white goods, although a considerable portion of this article will apply to other classes of goods as well. In fact, in a more difficult weave, the looking after of the little things is probably more to be desired than in a plain weave. On the class of goods with which we are to deal, the looking after the little things will lower the cost of labor, supplies and power, and increase the production and percentage of first quality cloth. I believe that this last item —the increase of first quality cloth—will show the most marked improvement if a greater care is exercised in the manufacture. I believe, also that the time has now arrived, when those of us who use the greater care in the manufacture of our goods will be at a most decided advantage in the marketing of our products over those who are careless or indifferent. This article is intended to deal principally with those little things, which are sometimes and often neglected, by which neglect there is no very serious loss of production or quality, but which, if looked after closely and incessantly, will obtain excellent results where fair or good results were before secured.

In order to prevent this paper being of too great length and tiresomeness, I have been compelled to refrain from referring to many little things, which should be carefully looked after. I believe that for the most part the care of the machinery is good, and any competent superintendent or overseer will see that the little things on the machine receive the proper attention. But—do we always give the same attention to the cotton itself in its process of manufacture? Do we follow it as closely and as carefully as we do the machines? Do we look after the cleanliness of the cotton as we do of the machines? Do we look after the little wastes of the cotton and yarn as we do of the supplies and repairs? All of the above will have to be answered by each one for

himself, but I hardly think that the answer will be, in the majority of cases, in the affirmative.

To begin with, there has been much criticism of the manner in which our cotton comes to us in the bale, and where a piece of cloth is wanted with as few defects as possible, there is certainly a very serious objection to the bales as now received. The outside of the cotton comes to us with dirt, stencil marks, tar and rust from ties, and various other substances with which it may have come in contact at the gin, warehouse or in shipment. These, if allowed to remain on the cotton, will show up to a more or less extent in the cloth. We have found distinctly showing in our filling, threads dyed red, and which came, no doubt, from the red ink with which our local cotton was formerly stenciled. Would it not be a good plan for those on high class goods to pick this cotton off the bales and either resell it or use it on a few frames or looms on a lower class of goods? The off-grade cotton, which is sometimes found in the bales could also be used with the pickings from the outside of the cotton. Especially would I think this advisable, when we know that the defects on this cotton will not only hurt the quality, but will also to some extent reduce the production.

In caring for the machines, we sometimes injure the quality of our goods—the most notable example being in oiling. We will find that the oil allowed to run out on the inside of the beater bearings will be found in the finished cloth as oily threads from a quarter of an inch to several inches long. As there is, all the way from the breaker to the spinning frame, a continuous doubling and drawing out of the cotton, defects in the early processes, while they may or may not show as plainly as those made in a later process, will affect a greater number of ends in the yarn, and a far greater length on the ends so affected. We should, therefore, be the more particular to look after the little defects in the picker and card rooms. Oil from steel or leather rolls or thrown from gear on speeders or spinning frames will often be found in the cloth. Oil that has been dropped on the warp or filling bobbins, when the oilers are even careful in oiling rolls and saddles, will also appear. Oilers very often get oil on the bobbins and quills by placing their oil cups or hands against the yarn when oiling spindles. Especially is this the case when the bases are set with the doffer guards on the inside to prevent the band knots being worn against them. To overcome this, I would suggest oiling where possible just after the frame has been doffed. Oil from shafts and bearings is so well known that it hardly needs to be mentioned here, but with a little more care, in many cases, there would be a big improvement along this line.

Another cause for oil and oily substances getting on the yarn or cloth in some mills is the cleaning of the machine with compressed air. So serious is this that where quality is wanted, I do not think it advisable to use this system, and though we have this equipment throughout our mill, we never use it in the carding and spinning rooms when running, or in the weave room except for cleaning motors. For the reason that the filling is one continuous thread, and the yarn from a given quill will all appear in a small section of the cloth, defects from oil or other causes are generally more noticeable in this than in the warp. Also, a thread when black or dirty can and should be taken out of the warp and be replaced with a thread from the selvage or elsewhere. Another cause for loss in quality and production is the small pieces of oily lint from slubber and speeder spindles, which gather in the ends of roving bobbins.

If, in doffing, the bobbins are carelessly thrown in the boxes, these pieces of dirty lint will get on the roving and either be twisted in with it in the next process or cause the end to break down. This is very common on all card room bobbins from the slubbers to the fine frames. This lint will also accumulate in the bottom of the roving boxes, and a great deal get on the roving in this manner. This can be very materially reduced by laying the roving in the boxes so that only the ends of the bobbins will touch, but this may to a slight extent reduce the production by taking longer to doff. It can be also greatly helped by making the sides and bottom of the roving boxes slatted, so that the dirt will fall through to the floor. If this is done the inside edges of the slats should be rounded off so as not to cut the roving. The help will often get oil and dirt on the roving, yarn or cloth by not keeping their hands clean, and they should be required to wash their hands after cleaning oily places before touching their work.

All of the foregoing will damage the quality and quantity of the production, but there are more small defects caused by lint being brushed or fanned off of the machines and flying into the ends or on the roving than from any other cause. Particularly is this the case in all the machines to the slasher, and the causes are various, among them being: Fanning out flyers, separators and other parts; brushing off spindle rails and bases with whisk-brooms and sweepers, throwing the lint too hard under the frames or in the alleys. The lint from the above places will fall into the ends at once, or on the roving in or on the creel, and in this way later get into the yarn. Spinners will, if allowed to clean out guides with pieces of cotton waste, often allow little pieces of the waste to get twisted in the ends, either breaking them down on the frame or in the spooler or weave rooms. If any small pieces should get through into the cloth, they will injure the quality. The remedy for these things is constant care and attention, and in some instances changing the method of having the work done. For instance, using rags for cleaning spindle rails and bases in the place of whisk brooms. The pins in the ends of the underclearers on the spinning frame should be closely looked after and kept free of lint or cotton. This will save many gouts and broken ends. The chalk used to mark the roving will show in the yarn and for this reason chalk as light in color as is possible to get should be used.

In passing to the spooler and warper room, I desire to state that greater care should be exercised in setting and keeping set the spooler guides, and in seeing that all the ends are run

through the guides. It is much easier and cheaper to tie up ends in this room than in the weave room —perhaps after a bad place has been made in the cloth. These guides should be set to a gauge only a little larger than the diameter of the thread. Spooler-hands should be required to hold the threads after tying a knot until the slack is taken up in order to prevent the yarn twisting up at the knot and causing trouble in the weave room. Neither should they be allowed to let loose strings be caught or tied in with the yarn as is often the case. If the spools are properly marked, the section-hand or warper-tender can, by running the warpers slowly a little while each day, find who is responsible for the bad work. Wooden warper skewers should be discarded as soon as the ends show much wear, as the additional friction then placed on the yarn will cause many more ends to break. The spoolers and warpers should be kept thoroughly clean, but should be cleaned only when they are stopped.

Before going to the weave room, I wish to say that if we have had the little things carefully looked after in the carding, spinning and spooler rooms, we will now be at a big advantage and be repaid many times for the care and attention we have given the yarn up to this room. The making of a given piece of cloth is a subject for serious consideration, consultation and experiment for the superintendent and overseers. The warp yarn should be as heavy and the filling as light as the character of the cloth will permit and keep the proper appearance. This will make the warp threads stronger and the filling quills last longer. The more the twist can be decreased in the filling the greater can be the difference in the numbers, as the less twist put into the yarn the larger its size.

The conditions in the spinning room, however, will have to here be taken into consideration. The build of the filling quill should be as perfect as possible, so that we can get a well filled quill, and care should be taken to so build the quill that the filling will not "rope" off. In getting a well filled quill we will increase the production in both the spinning and the weave rooms, as well as get a more perfect piece of cloth by having less shuttle marks in it. The greatest of care should be taken in setting up the loom to suit the cloth, being made so that we will secnre the best possible finish. The manner in which a warp is sized will make a great difference in the appearance of the cloth, and in this we should carefully consider the use for which the goods are intended. In the weave room there are many points on which good mill men will differ very considerably, and there, as elsewhere in the mill, no fixed rules can be followed.

There are many little things in the weave room which, if looked after closely will help the production and quality. In the ordering of harness and reeds we should use care and thought. The eyes of the harness should be as large and as open as the character of the weave will permit and not chafe the yarn too much, as a weaver can draw a broken thread through an open oval eye much more quickly than through a long, narrow one. To permit of adjustment the reed should not be long enough to occupy the entire reed space. If the reed is a little shorter than the reed space, we can set the reed with the harness, even if they are not drawn straight, and in this manner sometimes save the selvages a very severe strain by them not having to go from the harness to the reed at an angle. The reed should not be deeper than is necessary for the shade of the cloth, for the wider the reed, the greater the tendency to remain open after a thread has been drawn through.

There has been a great deal said for and against leather on shuttle binders, and though I think that the wooden binder covered with leather is by far the best, I will not insist on making a point of this. Different styles of looms will have different details, therefore what might be best on one loom may not be on another make, and for this reason everything said will not be applicable to all looms. In explanation, too, of some of the things that I am going to say, and while I want to refrain as much as possible from personal allusions, I want to say that at our mill we make from 72 to 99 inch cloth for sheets, and from the fact that our looms are so wide, we have been able to notice and overcome some things, which, while they are more noticeable on the wider loom, will apply to the narrower loom as well. In the bearings of our vibrating whip-rolls, we have riveted a little piece of leather, and have found that by putting two or three drops of oil on this leather before tying on a new warp, we keep these bearings sufficiently oiled, and at the same time prevent any oil working out on the warp.

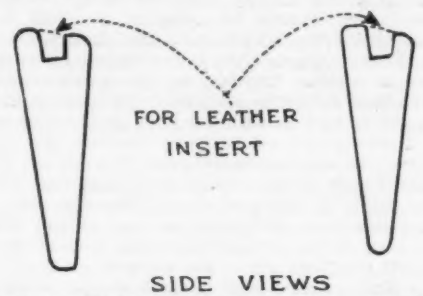
Every loom-fixer knows that there is considerable trouble replacing parallel blocks made of wood even on a narrow loom. They know that though these blocks are well soaked in oil, they are not so satisfactory, and that the wear must be much more on the wider loom. I have here, Fig. 1, a little device made of cast iron with a piece of leather inserted, which we are using instead of the wooden block, and have found most satisfactory. The leather is to hold the oil, and we find that oiling once each week is entirely sufficient. This block has the advantage of lasting almost indefinitely, and the first cost is little, if any, more than that of the wooden block. I think that I am safe in saying that we will not use over two or three of these blocks on the wide looms to the one hundred looms per year. To prove how small is the wear on this block, I have here, Fig. 2, one that has been used over three years, and the wear is hardly perceptible. I have also the parallel tongue against which this block worked, and the wear on it is likewise scarcely noticeable.

In fixing almost any loom there will be found some small pieces that are defective and give more trouble than they should. If, after a thorough examination, this is found to be fault of the part, and not of poor fixing or lack of attention, some plan should be devised to overcome this defect, and instead of ordering defective pieces over and over again, stronger and more durable parts should be ordered to replace the weaker ones as they give out. These may be obtained from a foundry or direct from the manufacturers. In cases like this, I think, the manufacturers will be found more than willing to listen to intelligent

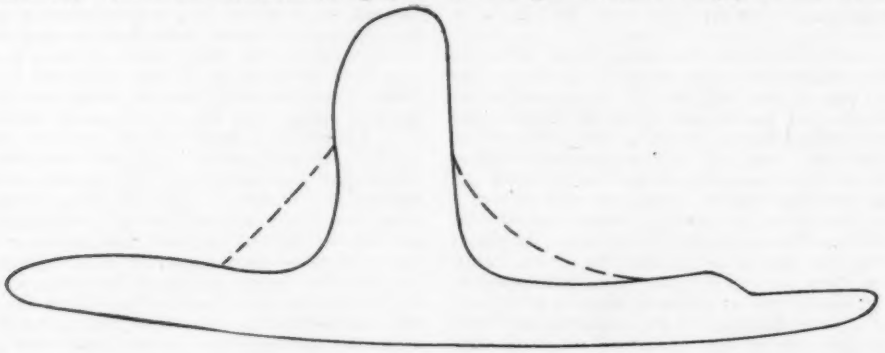
suggestions from practical men. As an example of one of these defective pieces, I have here, Fig. 3, a parallel shoe, which gave us considerable trouble, and very often broke just at the front of the stick, and sometimes at the back of the stick. We got the manufacturers to replace it with this one, which is reinforced at both places where the old one was weak. This new shoe does not give any trouble at all, and I find that the manufacturers have given it the same number as the old shoe, which will show that they have discarded the old pattern. There are several other small things on a loom, but I think that these should be enough to serve as samples.

The shuttle is another little thing that I believe needs attention in a number of mills. All will admit, I think, that the back of the shuttle wears most. Before I prepared this part of this article, I requested shuttles from several mills, and I have here the shuttles which I received in response to my requests. You will note that all have the back the same thickness as the front, though as stated above, the back will wear out as a rule much more quickly. I have also a sample of the shuttle we are using on our wide looms—the back being from 1/16 to 3/32 of an inch thicker than the front. This not only gives the shuttle a chance to be planed off when for any reason the back has become worn, but also adds greatly to the strength of the shuttle, and will increase the life, as we have found, from 50 to 100 per cent. Some may argue, to my mind wrongfully, that it will take more power to run this shuttle, and even granting that it does, it will amount to very little as compared to the efficiency of the shuttle. To ascertain about what is the additional weight, I have sawed out the back of one of the reinforced shuttles, and find that the entire back weighs, on grain scales, a little less than two and one-half ounces. The weight then of the extra thickness will hardly amount to over three-fourths of an ounce, or less than the variations in an ordinary lot of shuttles of the same size. Some might also argue that this shuttle will not run true, and fly out or turn over, but I think the back side being the heaviest is an advantage instead of a disadvantage, and we have had no trouble in this respect in the nearly four years we have been using it. Likewise, it might pay to strengthen hand-threading shuttles at the eye, as there is more or less trouble and expense caused by these bursting or splitting at this point. In the same way the picker stick and other parts of the loom can be reinforced.

FIG. 1. FIG. 2.



SIDE VIEWS
CAST IRON PARALLEL BLOCKS



PARALLEL SHOE
DOTTED LINES SHOW REINFORCED SHOE

FIG. 3

In the manufacture of plain cotton goods, the cloth room is, as a rule, the most neglected place in the mill, and this is, in my opinion, a very serious mistake. Particularly, great care should

be taken where the cloth is to go direct to the consumer, as the outside appearance is what the merchant and lady buyer will consider mostly. In this way, a rather inferior piece of goods, well put up, has oftentimes a decided advantage over a much better cloth carelessly packed. Cloth can be best inspected on machines made for this purpose. Here many of the little defects, which in spite of all the care and attention we can give, are often to be found, can be corrected. All knotty filling should be taken out, threads-out scratched up, and oil washed out. An excellent solution for taking out this oil can be made by chipping up four pounds of Ivory soap and boiling it in eight gallons water. To this add one to four ounces saltpetre and a gallon of ammonia. Rub this solution into the cloth with the end of a hardwood paddle until the oil disappears and then wash out with a sponge and clean water. (I have here samples showing how well this will work).

In inspecting the cloth each inspector should have printed forms with separate spaces for each of the following:

DAILY REPORT OF CLOTH INSPECTED

Date	191		
		Cuts	Remarks
Firsts	.....	.....	.....
Threads out	.....	.....	.....
Three Threads in reed	.....	.....	.....
Flats	.....	.....	.....
Over or under shots	.....	.....	.....
Bad selvage	.....	.....	.....
Oily warp	.....		
Oily filling	.....		
Black oil	.....		
Dirty hands or tools	.....		
Kinky filling	.....		
Bad places	.....		
Thin places	.....		
Bad reed	.....		
Hard size	.....		
Cockle filling	.....		
	.....		
Total imperfect cloth	.....	.....	
Total cuts inspected	.....	.....	

....

Superintendent. Overseer.

By using this report the overseer or superintendent can tell at a glance how much seconds are being made and from what causes, and knowing this, they can the more readily apply the remedy. As the bad cloth is shown to the weavers, all that can be made into firsts should be laid aside to be worked over.

As stated in the beginning, the looking after the little things can and will make a big improvement in the production and quality of a mill, and if, in ordering new supplies or repairs, care will be taken to get the best things for the purpose intended, whether it is the same as has been in use or not, defective parts will be gradually built up and all greatly improved. Also, as before stated, the looking after the little things will help the quality of the cloth more than anything else, and if this is done throughout the mill, it should not be a difficult matter to get from 98 to 99 per cent. firsts, instead of the 90 to 95 per cent. that some mills do get. In order to the more readily find and overcome the little difficulties in a mill, the overseer should encourage those under him to make suggestions for helping or preventing the little annoyances with which they may come in daily contact. The superintendent, too, should be ever ready and willing to try out any plan which gives promise of a slight improvement in production or quality, or of a savings in supplies or power. Likewise, all the overseers should cooperate with each other, and the carder and spinner should be more than willing to go to extra care and trouble in their departments that the weave room might get the advantage thereof. In this way they will work to their own advantage, as well as that of the mill, for the greater the weave room production, the less should their proportion of the cost per pound be.

As we all know, Southern made goods have sometimes been considered slightly inferior to some other makes, and for this reason it now behooves us to so carefully and unceasingly look after the little things that the time will soon arrive, when this disadvantage will have been overcome, and when there will be no trade mark or trade slogan better than that of a "Made in the South."

ELECTRIC HOSIERY STAMPING MACHINE

H. A. Meyercord, of the Philadelphia office of the Meyercord Co., Bulletin Bldg., Juniper and Filbert Sts., has recently invented and brought out a new machine for affixing the Meyercord stamps to hosiery, taking the place of the work that is now done by hand. This machine, which is electrically operated, will considerably increase the number of stamps put on by one operation and will give a much more uniform impression. This will be of special interest to the large manufacturers who are using the Meyercord system of gold stamping hosiery, making it easier than ever to employ this attractive method of stamping goods. The former method of putting stamps on by hand has been no bar to using these brilliant stamps, but the new device is another step forward in the process.

During July, 1911, the imports of laces and embroideries into the United States were valued at $2,500,000, of which the value of embroideries was $1,000,000; laces and lace curtains, $1,250,000; lace window curtains, $100,000; nets and nettings, $140,000, while hand made laces amounted to but $35,000.

Personals

Henry Rowe, superintendent of the bleachery connected with the Irving Cotton Mills Co., West Durham, N. C., has severed his connection with that company and secured a similar position with the Ramapo Bleachery, Waldwick, N. J.

H. A. Holder, formerly of Manchester, Ga., has returned to his old position as overseer of spinning at the Hutcheson Mfg. Co., Banning, Ga.

J. F. Brown has succeeded M. C. Clippard as overseer of carding at the Raeford Power & Mfg. Co., Raeford, N. C.

Tom Jones has accepted the position as overseer of carding at the Montgomery Cordage Co., Montgomery, Ala. He comes from Ellawhite, Ala.

J. H. Hearne, formerly overseer of weaving at the Pomona Mills, Greensboro, N. C., has accepted a similar position with the Dixie Mills, La Grange, Ga.

R. E. Estes has been promoted from the position of second hand to overseer of weaving at the Elm City Mills, La Grange, Ga.

H. P. Hancock has accepted a position as overseer of carding at the Fairfield Mills, Winnsboro, S. C.

R. L. Howe, for the past six years overseer of carding at the Fairfield Mill, Winnsboro, S. C., has resigned to accept a similar position with the Arcade Mill, Rock Hill, S. C.

J. H. Jenkins, formerly overseer of carding at the W. S. Gray Mill, Woodruff, S. C., has accepted a similar position with the Eno Cotton Mills, Hillsboro, N. H.

Joseph McGowan, overseer of carding at the Mystic Woolen Co.'s No. 2 Mill, Hope Valley, R. I., has resigned and is succeeded by George M. Smith.

Oscar White, overseer of carding at the Locustville Woolen Co., Hope Valley, R. I., has severed his connection with that company.

Thomas Hallows, overseer of carding at the Globe Yarn Mill, Fall River, Mass., has been appointed overseer of carding at the Pilgrim Mill. F. L. Chapman of the Burgess Mill, Pawtucket, R. I., has been engaged as master mechanic.

W. H. Yount has accepted the position as overseer of carding and spinning at the Sykes Woolen Mills Co., Reynoldsville, Pa. He comes from Napoleon, Ohio.

Harvey W. Morrill, formerly superintendent of the Nos. 8, 9 and 10 mills of the Ludlow Mfg. Associates, Ludlow, Mass., has been appointed assistant general superintendent of the company. George G. Bennett, engineer, succeeds Mr. Morrill as superintendent.

Frank E. Heymer has accepted the position as agent of the Alexander City Cotton Mill, Alexander City, Ala. He was formerly employed at Lando, S. C. Mr. Heyner has just returned from a visit to his former home in Europe.

Joseph Cherry has accepted a position as overseer of carding and spinning at the J. D. Clark Co., Rochdale, Mass., succeeding C. T. Booth.

John McLay has been appointed agent of the Valley Mills, American Woolen Co., Providence, R. I. He comes from Lawrence, Mass.

David Bigwood, vice-president and superintendent of the Taft Woolen Co., Caryville Mills, Caryville, Mass., has severed his connection with that company. It is stated he has been in their employ for twenty years. He was presented with a beautiful cellarette and smoker combined by the help in the Caryville Mills.

F. G. Parker, formerly overseer of carding and spinning at the Fidelity Mfg. Co., Charlotte, N. C., has been promoted to the position of superintendent.

R. L. Gaddy has accepted the position as overseer of weaving at the Fidelity Mfg. Co., Charlotte, N. C.

H. A. Emsley has accepted the position of assistant superintendent of the Wuskanut Mill, Farnumsville, Mass. He comes from Philadelphia, Pa.

Francis H. Jealous, who has been agent of the Vassalboro Mill, American Woolen Co., North Vassalboro, Me., has been transferred to the position of agent of the Rochdale Mill, Rochdale, Mass., recently purchased by the American Woolen Co.

Moses Pickels has accepted the position as overseer of drawing at the Valley Worsted Mill, American Woolen Co., Providence, R. I.

W. R. Ennis has accepted the position as overseer of spinning at the Majestic Mfg. Co., Belmont, N. C. He was recently with the Southern Spindle & Flyer Co., and succeeds W. J. Willett.

John W. Hillam has accepted a position as overseer of spinning at the Valley Worsted Company, Providence, R. I. He comes from Lawrence, Mass.

James Harper has accepted the position as overseer of bleaching at the Stark Mills, Manchester, N. H. He was formerly employed at the Franklin Mills Corporation, Unionville, Mass.

Thomas Bryant has been promoted to the position as overseer of the starching department at the Clyde Print Works, River Point, R. I., succeeding William Brown.

Herman J. Feldhege, superintendent of the Central Silk Mfg. Co., Inc., Siegfried, Pa., has resigned and is succeeded by H. G. Warland, vice-president and manager.

Alexander C. Gaskell, superintendent of the Laurens Cotton Mills, Laurens, S. C., has resigned his position at that mill. It is stated he expects

to give up the mill business and give his entire attention to farming and stock raising.

George W. C. Chapman has accepted the position as overseer of weaving at the General Asbestos & Rubber Works, Charleston, S. C. He comes from Huntsville, Ala.

B. P. Howe has resumed his old position as overseer of spinning at the Fairfield Mill, Winnsboro, S. C.

Arthur F. Caswell, overseer of weaving at the Soule Mill, New Bedford, Mass., has severed his connection with that company.

Samuel A. Goodfellow, overseer of weaving at the Taber Mill, New Bedford, Mass., has severed his connection with that company and intends to take a vacation for some time before taking up a position elsewhere.

Robert Bradshaw, overseer of weaving at the Grinnell Mill, New Bedford, Mass., has resigned to accept a similar position at the Soule Mill, same city.

J. C. Cameron, designer at the Hockanum Mills Co., Rockville, Conn., has resigned to accept a position as superintendent of the Strathmore Worsted Mill, Concord Junction, Mass.

W. H. Gibson, Jr., has accepted the position as overseer of weaving, designing, slashing and drawing-in at the Wylie Mill, Chester, S. C.

G. C. Dilling has been appointed superintendent of the Gatesville Cotton Mills, Gatesville, Tex. He comes from Hillsboro, Tex.

J. M. Sizemore has succeeded Jno. Enloe as overseer of spinning at the Orange Cotton Mill, Orangeburg, S. C.

E. W. Billings has accepted the position as superintendent of the carding and spinning at the Fort Dummer Mill, Brattleboro, Vt. Mr. Billings has been employed in a similar position with the Greylock Mill No. 2, Williamstown, Mass. He is considered an exceptionally good man and understands the manufacture of cotton goods from the raw stock to the finished fabric. He has been very successful in mills where he has been employed and has left each position with the best wishes of his employer and also those who have been employed under him.

Lawrence H. Love has accepted the position as overseer of weaving at the Berkshire Woolen & Worsted Co., Pittsfield, Mass. He comes from Uxbridge, Mass.

P. C. Boutielle has accepted the position as overseer of spinning at the Greylock Mill, No. 2, Williamstown, Mass. He comes from Westbrook, Me.

Cliff Moore has accepted the position as overseer of spinning on the night shift at the Hamrick Mill, Gaffney, S. C.

G. J. King, overseer of spinning at the New Century Mill, South Boston, Va., has resigned to accept a similar position with the Victoria Mill, Rock Hill, S. C.

John Kenny has accepted the position as overseer of carding at the Greylock Mill, No. 2, Williamstown, Mass. He comes from North Adams, Mass.

George F. Maguire has accepted the position as overseer of carding at the Homestead Woolen Co., West Swanzy, N. H., formerly known as the Granite Woolen Mills. Mr. Maguire comes from Malone, N. Y.

William T. Woodrow, overseer of weaving at the Nottingham Mill, Providence, R. I., has severed his connection with that company.

Thomas Goggins has accepted the position as overseer of spinning at the Rochester Woolen Co., Rochester, N. H., succeeding George Taylor.

R. B. Hunt, overseer of spinning at the Columbus Mfg. Co., Columbus, Ga., has resigned to accept a similar position with the LaGrange Mfg. Co., LaGrange, Ga.

J. F. Bright, formerly of the Georgia Cordage Co., Decatur, Ga., has accepted a position as overseer of carding at the Winder Cotton Mills, Winder, Ga.

T. G. Hawkins, who resigned the superintendency of the Montgomery Cotton Mills, Montgomery, Ala., has accepted a position in the card room at the Montgomery Cordage Co., same place.

O. E. Wilson, overseer of carding at the Winder Cotton Mills, Winder, Ga., has resigned to accept a similar position with the Henderson Cotton Mills, Henderson, Ky.

Thomas E. Moriarty has accepted the position as overseer of weaving at the Nottingham Mill, B. B. & R. Knight Co., Providence, R. I. He was formerly second hand at the Nashawena Mill, New Bedford, Mass.

Thomas Grimes has accepted the position as overseer of weaving at the Taber Mill, New Bedford, Mass., succeeding Samuel A. Goodfellow. Mr. Grimes formerly held the position of designer at the same mill.

Rudolph Mueller, overseer of finishing at the Lacon Woolen Mills, Lacon, Ill., has severed his connection with that company.

W. H. Wye, Jr., superintendent of the W. H. Wye Co., manufacturers of jerseys and sweaters, Needham, Mass., has severed his connection with that company. He has been in the employ of this concern for over ten years. He has made no plans for the future.

John G. Oswald has accepted the position of superintendent of the Crown Mfg. Co., Pawtucket, R. I. He was formerly at the Champlain Silk Mills, Brooklyn, N. Y.

Fred Hollingsworth, who has had charge of the stock dyeing at the Yantic Woolen Co., Yantic, Conn., will assume full charge of both piece and stock dyeing for the same company.

Harry J. Silvy, overseer of dyeing at the Yantic Woolen Co., Yantic, Conn., has given up his position to return to the Elmville Worsted Mill, Danielson, Conn., a position which he formerly held.

Mr. Silvy leaves with the good wishes of the company and those with whom he was associated.

W. H. Fieldhouse, for the past twenty years representing the Badische Co., and who has been connected with several of their offices, including one at Chicago, Montreal, San Francisco and New York, has severed his connection with that company.

Daniel J. Cook has resigned his position as manager of the broad silk department of the Van Raalte Silk Company, Paterson, N. J., to accept a similar position in Newark.

Michael Sullivan has accepted a position as overseer of spinning for the Baltic Mills, of the American Woolen Co., Enfield, N. H. He comes from South Royalston, Mass.

O. D. Hogue has been appointed vice president and treasurer of The Goulds Mfg. Co. of Illinois.

W. E. Williams, superintendent of the Lawrenceville Mfg. Co., Lawrenceville, Ga., has resigned to accept a similar position at the Sutherland Mfg. Co., Augusta, Ga.

H. Gould Welborn has resigned as general superintendent of the mills at Lexington and Irene, S. C. He has been appointed general superintendent of the Parker Mills, Columbia, S. C.

Henry Doyle, overseer of carding at the Whitman Mill, New Bedford, Mass., has severed his connection with that company after nine years of service.

John P. Shaw has accepted the position as overseer of the weaving room at the Army & Navy Duck Co., Wilkinsonville, Mass., He comes from Fitchburg, Mass.

W. W. Morrison has accepted a position as overseer of the cloth department at the Boott Mill, Lowell, Mass., succeeding C. F. Good.

Harry Hodgman has accepted the position as overseer of weaving at the Mohegan Mill, Wanskuck Co., Mohegan, R. I.

Arthur Drew, overseer of carding at the Dwight Mfg. Co., Chicopee, Mass., has resigned to accept a position as superintendent of the Dominion Textile Co.'s mill at Halifax, N. S., Canada.

George A. Schofield, manager of the Airdale Mills Co., Pittsfield, Mass., has tendered his resignation, to take effect about Dec. 1. It is mentioned that W. H. Merritt is his successor. Mr. Merritt has been connected with the plant for some time.

W. J. Hallett has resigned his position in the Paterson, N. J., branch of Stehli & Co. and has accepted a position with Ashley & Bailey at Marietta, Pa.

Joseph Costine, overseer of finishing at the Somerset Woolen Co., Monson, Mass., has severed his connection with that company.

J. H. Bagwell, who was for some time overseer of weaving at the Mecklenburg Mills and later at the Hoskins Mill of Charlotte, N. C., has accepted a similar position with the Indianapolis Bleaching Co., of Indianapolis, Ind.

J. W. Brown has accepted a position as overseer of weaving at the Eagle & Phenix Mills, Columbus, Ga. He was formerly employed at the Columbus Mfg. Co., same city.

Charles H. Platt, overseer of spinning at the Bennett Mill, New Bedford, Mass., died November 4th at the age of 28 years.

Walter Poors has been engaged as boss spinner at the Homestead Woolen Co., West Swanzy, N. H.

Alfred J. Andrew has been appointed overseer of weaving at the U. S. Cotton Co., Central Falls, R. I., succeeding John Grimshaw.

R. Quigley has accepted the position as overseer of dyeing at the Homestead Woolen Co., West Swanzy, N. H.

Henry Arnold has accepted the position as overseer of dyeing at the Apponaug Print Works, Apponaug. R. I. He comes from Norwich, Conn.

Robinson Walmsley, superintendent of the Tecumseh Mill, Fall River, Mass., has severed his connection with that company.

Arthur Dudley has accepted the position as overseer of finishing at the Homestead Woolen Co., West Swanzy, N. H.

E. H. Davis has accepted the position as overseer of weaving at the Homestead Woolen Co., West Swanzy, N. H.

E. M. Main, overseer of weaving at the Edwards Mfg. Co., Augusta, Me., has severed his connection with that company.

J. D. Boseman, superintendent of the Peck Mfg. Co., Warrenton, N. C., has severed his connection with that company.

William Gibson has accepted the position as overseer of spinning at Mill No. 2 of the Massachusetts Mills, Lindale, Ga.

C. E. O'Pry, formerly overseer of spinning at the Hartwell Mills, Hartwell, Ga., has accepted a position as overseer of carding and spinning at the Vardry Mills, Greenville, S. C.

L. H. Roberts has accepted the position as overseer of spinning at the Winder Cotton Mills, Winder, Ga.

W. A. Esslinger has accepted the position as overseer of weaving at the Merrimack Mills No. 1, Huntsville, Ala., succeeding C. H. Hopper.

C. W. Wainwright has accepted the position as superintendent of the Lone Star Cotton Mill, Brenham, Tex.

J. H. McMahan, formerly employed at the Woodruff Cotton Mills, Woodruff, S. C., has resigned to accept a position as overseer of carding at the W. S. Gray Cotton Mills of the same place.

D. G. Ellenburg, overseer of spinning at the Summerville Cotton Mills, Summerville, Ga., has resigned on account of ill health.

William Brown, overseer of starching at the Clyde Print Works, River Point, R. I., has severed his connection with that company. He is succeeded by Thomas Bryant.

Robert S. Crawford has accepted the position as overseer of carding at the Alexander City Cotton Mills, Alexander City, Ala.

Albert E. Pray has been appointed second hand of spinning, spooling and warping at the Berkeley Mill, Ashton, R. I.

Earl J. Pray, overseer of spinning at the U. S. Cotton Co., Central Falls, R. I., has severed his connection with that company.

Nicholas Kavanaugh, manager of the Rutholt Dye Works, Philadelphia, Pa., has severed his connection with that company.

Harry Webster, late of the Leicester & Continental Mills Co., Philadelphia, Pa., has accepted the position as overseer of dyeing and finishing at the Fidelity Finishing Co. of the same city.

John Richardson, superintendent of the dyeing and finishing at the Annevar Dyeing & Finishing Mills, Ravenna, Ohio, has severed his connection with that company. He is succeeded by Mr. Armitage from Bradford, Eng.

James H. Donovan, overseer of weaving at the Mohegan Mills, Wanskuck Co., Mohegan, R. I., has severed his connection with that company.

Martin O'Neil has accepted the position as overseer of finishing for Dexter, Richards & Sons, Newport, N. H. He was formerly employed at the Peace Dale Mfg. Co., Peace Dale, R. I.

James A. Metcalf has accepted the position as designer at the Booth Mfg. Co., New Bedford, Mass. He was formerly employed at the Newmarket Mfg. Co., Newmarket, N. H.

Alexander Shaw, overseer of finishing at the Liondale Bleachery, Rockaway, N. J., has severed his connection with that company.

C. A. Mattison, formerly second hand at the Cox Mill, Anderson, S. C., is now filling the position as overseer of weaving at the No. 1 weave room, Anderson Mills, Anderson, S. C.

H. V. Deaver has accepted the position as overseer of carding at the Maple Mills, Dillon, S. C.

W. A. Henderson, overseer of spinning at the Holt-Williamson Mills, Fayetteville, N. C., has resigned on account of ill health.

J. H. Hearne, who resigned some time ago as overseer of spinning at the Highland Park Mills, No. 3, Charlotte, N. C., has accepted a position with the Magnolia Mills of the same city as superintendent.

J. Nece, overseer of carding and spinning at the Holt Granite Mills, Nos. 2 and 3, at Haw River, N. C., has severed his connection with that company.

T. M. Foster has accepted the position as overseer of carding and spinning at the Georgia Cordage Mills, Decatur, Ga. He comes from Atlanta, Ga.

H. J. Forsyth has been appointed superintendent of the Avondale Mills, Birmingham, Ala., having resigned a position with the Griffin Mfg. Co., Griffin, Ga., as overseer of weaving.

E. C. Little, who has been overseer of carding for the past seven years at Williamston, S. C., has resigned. He has been appointed superintendent of the Maplecroft Mills, Liberty, S. C.

William T. Woodrow has accepted the position as overseer of weaving at the Suncook Mills, Suncook, N. H., succeeding W. W. Quinton. Mr. Woodrow was formerly employed at the Nottingham Mill, Providence, R. I.

W. G. Ratcliffe has been appointed superintendent of the Verlenden Bros., Inc., Imperial Mill, Darby, Pa. He was formerly employed at the Sykes Woolen Mills Co., Reynoldsville, Pa., and succeeds Charles B. Verlenden.

Several changes have recently been made at the Dominion Textile Company's mill. The vacant position of superintendent for the Hochelaga Mill was filled by the promotion of George H. Wilson from their Magog branch mill. The position at Magog has been filled by A. H. McManus from Halifax. A. F. Drew of Chicopee, Mass., has taken the position at Halifax.

Carl Freschl, the originator of "guarantee" hosiery, and one of the pioneer hosiery manufacturers of the North West, died Friday, November 24, at his home in Milwaukee, Wis., at the age of sixty-nine years. He was born in Austria and came to America forty-one years ago and located in Manchester, N. H. He removed later to Kalamazoo, Mich., and founded what was known as the Kalamazoo Knitting Works. Ten years later he moved the plant to Milwaukee and organized the Holeproof Hosiery Co. He leaves a widow, one daughter and three sons.

A. S. Hamilton, president of the Trion Cotton Mills, Trion, Ga., has resigned owing to poor health. The directors contemplate meeting to elect a permanent president.

Jno. T. Ryan has accepted the position as overseer of spinning at the U. S. Cotton Co., Central Falls, R. I. He comes from Taunton, Mass.

P. I. Driscoll has been appointed assistant superintendent to Lewis Miner at the Wakefield Mfg. Co., Wakefield, R. I.

Lewis Miner, assistant superintendent of the Wakefield Mfg. Co., Wakefield, R. I., has been appointed superintendent to succeed F. C. Patterson.

*South Carolina, Greenville. There have been numerous reports to the effect that the new mill under construction for the Gilreath Mfg. Co. would be equipped to manufacture knit underwear. This is incorrect. The concern manufactures athletic underwear and elastic seam drawers and will make these lines in the new building.

*Tennessee, Nashville. The Ideal Mfg. Co., recently organized here with capital stock of $10,000, manufactures a physical culture brace and may make women's fine underwear. Wm. C. McLellan

is president and J. G. Claiborne, secretary and treasurer.

Tennessee, Nashville. It is reported that James H. McPhail of the Nashville Saddlery Co., and also president of the Nashville Hosiery Mills, is negotiating with parties with a view to starting up the mills.

Virginia, Elba. R. B. Powell of this place is promoting a $40,000 knitting mill proposition.

Wisconsin, Green Bay. The Inland Knitting Works are employing 15 hands making fancy wool knit goods. The plant was removed here from Luxembourg in the summer and the company reorganized with capital stock of $15,000 and Joseph Lhost elected president and Peter Boucher, treasurer and superintendent.

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Personals.

Daniel Scullen has accepted the position as superintendent of the Hayes Knitting Co., Oswego, N. Y., formerly known as the Oswego Knitting Co. He comes from Waterford, N. Y.

Jay Southerland has accepted the position as superintendent of the Rome Textile Co., Rome, N. Y., succeeding T. S. Griffin.

J. Burton B. LaFleur has accepted a position as overseer of knitting at the Malden Knitting Co., Malden, Mass. He was formerly employed at the Hope Knitting Co., Woonsocket, R. I.

Claude Hebbard, superintendent of the Malden Knitting Co., Malden, Mass., has resigned to accept a similar position with the High Grade Mills, Hartford, Conn.

T. S. Griffin has been appointed manager of the Rome Knitting Co., Rome, N. Y. He was formerly connected with the Rome Textile Co., same city.

DEATHS.

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William Emsley, a member of the firm of Wm. Emsley & Sons, manufacturers of wool and merino yarns, North Hancock St., Philadelphia, died at the age of 70 years. He was born in England and came to this country and has since resided in Philadelphia. He is survived by a widow, one son and a daughter.

John P. Shepard, president and superintendent of the Salem Knitting Mills which were operated at Salem, N. J., several years ago, died suddenly at his home in Salem of apoplexy. He had not been in active business for some time.

Samuel Cogswell died at his home in Elmville, Conn., at the age of 65 years. He was born in Trowbridge, Wiltshire Co., Eng., and came to this country with his parents when a child. After graduating from the public schools he took up mill life and was with the Sayles Mill of Dayville, Conn., for a number of years. His last position was overseer of weaving at the Assawaga Co., Dayville. He is survived by a widow, one son and a daughter.

Charles Harvey Clapp, assistant superintendent of the Gosnold Mill, New Bedford, Mass., and one of the youngest mill officials in that city, died at his home November 4. He was 28 years of age and single. He had been in failing health for some time and it was not supposed until a few days ago that his condition was serious. The young man had recently accepted a position at Fall River and was preparing to leave to take up his new duties.

Col. Alfred B. Shepperson, one of the best known men in the cotton trade, died suddenly in his office in the Cotton Exchange Bldg., in New York. As the author of Shepperson's "Code" and "Cotton Facts" his name was constantly in the minds of manufacturers, merchants and brokers, and his statistical compilations have been regarded as authority in the cotton trade for years. His death will come in the sense of a personal loss to many who have referred to his publications for authoritative information.

John N. Carpenter, president of the Norfolk & New Brunswick Hosiery Co., New Brunswick, N. J., died at his home at the age of 66 years. Previous to his death he was associated with his brother in Wall St., New York, in banking circles.

Charles D. Tullar, who was president of the Exposition Cotton Mill of Atlanta, Ga., and a leading figure in textile manufacturing throughout the South, died at the age of 50 years. He was connected with the Roswell Mfg. Co., the Habersham Mill and president of the Georgia Industrial Association, also a director in the Carolina organization of mills. It was through his efforts that the operators in cotton mills throughout the State of Georgia secured various forms of relief in working conditions. He is survived by a widow and seven children.

Carl Freschl, aged 69 years, a pioneer hosiery manufacturer of the middle west, died recently at his home, 530 Lake Drive.

Mr. Freschl, who was president of the Holeproof Hosiery Company, was the originator of the guaranteed hosiery idea, which has been copied all over the country.

Mr. Freschl was born in Prague, Austria, and came to this country when 26 years of age, locating first at Manchester, N. H. Later he removed to Kalamazoo, Mich., where he founded the Kalamazoo Knitting Works in 1872, that being the first hosiery manufacturing plant to be established west of the Alleghany Mountains. In 1882 Mr. Freshl moved his plant to Milwaukee, continuing the business under the same name until 1904, when the Holeproof Hosiery Company was organized.

During his years in business Mr. Freschl became widely known for his painstaking care in the manufacture of his product and for his business ability and square dealings, and it was this carefulness in the manufacture of hosiery which gave him the idea of guaranteeing his product.

Besides the widow, he is survived by one daughter, Mrs. Henry Gattman, and three sons, Edward, William W. and Max A. Freschl, all of Milwaukee.

Mill News

Those interested in receiving early and more complete investigated information of projected new mills, enlargements, improvements, fires, facts and gossip of the trade are referred to the TEXTILE ADVANCE NEWS, issued weekly by the publishers of the TEXTILE WORLD RECORD, at $15.00 per year.

COTTON.

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New Mills.

*Georgia, Forsyth. The Star Cotton Mill has been organized with a capital of $30,000 to take over and operate the plant of the Newton-Harp Mfg. Co. It is stated that $12,000 worth of new spinning equipment has been purchased, also a steam plant. The Newton-Harp Co. manufactured 7s and 12s yarns on equipment of 3,360 ring spindles and 830 twisting spindles. The new company expects to begin operations about January 1.

Massachusetts, Boston. The Chace Mfg. Co. has been incorporated with a capital stock of $1,000,000, by Geo. G. Proctor, Geo. M. Faulkner and Emiline M. Bellard. The new corporation is authorized to manufacture and deal in yarn and cotton cloth and other textile fabrics.

*Massachusetts, Fall River. Work on the Pilgrim Mills which was started early in the year has progressed satisfactorily and it will be possible to put the plant in operation within a few months. As noted previously, this mill will be operated entirely by electric power, which will be purchased

*Massachusetts, New Bedford. Next Monday the Charlton Mills will be started up. The plant, which has been in process of construction for over a year, is now completed and all machinery with the exception of some of the spinning equipment has been installed.

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Enlargements and Improvements.

Alabama, Alabama City. New spinning equipment is being installed by the Dwight Mfg. Co. and it is expected before long all of the old machinery will be replaced by more modern equipment. One hundred new automatic looms have just been received and will replace old ones that are now being taken out.

*Alabama, Anniston. Construction is progressing on the American Net & Twine Co.'s enlargement. Details have been given previously.

Alabama, Cordova. New drawing machinery, slubbers, intermediate frames, fly frames and 405 36-inch looms have been installed in the Indian Head Mills of Alabama.

*Connecticut, Bridgeport. The new addition to the plant of the Bridgeport Elastic Fabric Co., Inc., to contain office, shipping, finishing and stock departments, work on which has been started, as reported in the last issue, will be 90 by 55 ft., 2 stories high. Some additional machinery will be installed, details of which are not given at this time.

Connecticut, Killingly. Work has been started on the proposed addition to the plant of the Killingly Mfg. Co., formerly the Williamsville Mfg. Co. plant, which will be 2 stories high, 120 by 220 ft., and will be located at the south side of the present plant The new space will be used for weaving purposes and will provide for an increase in the number of looms from 650 to about 1,200. The number of spindles is to be increased approximately from 25,000 to about 50,000. It is expected the enlargement will be completed and fully equipped before the middle of 1912.

*Connecticut, Middletown. Work was started in October on the new three-story weaving mill for the Russell Mfg. Co., and it will be equipped ready for manufacturing by March 1, giving employment to forty hands. The new mill is to be 50 by 75 ft. and the complete equipment will be sixty looms for making narrow webbings. This concern manufactures only narrow goods. The capital stock is $900,000. E. K. Hubbard is president and buyer, L. de K. Hubbard is treasurer and F. H. Foissell is superintendent.

*Connecticut, Plainfield. Contract for the electrical installation of the new plant of the Plainfield Mills Corp. has been awarded to the Whitall Electrical Co. of Westerly, R. I.

Georgia, Berryton. Only hosiery yarns, 10s to 16s, are made at the Berryton Mills. They have discontinued making hosiery, combining all the knitting at the Rome Hosiery Mills at Rome and have added 2,200 spindles to the Berryton Mills, giving a total of 7,200 spindles.

Georgia, Egan. Twenty-two broad looms will be installed in the Piedmont Cotton Mills. An additional building is now under construction.

Georgia, Palmetto. The Palmetto Cotton Mills, cotton duck and skein yarns, who recently replaced 20 old looms with 18 new ones, are reported as building an addition, 50 by 150 feet, to be used as a cloth and storage room.

Massachusetts, Adams. Bids are being received by the Renfrew Mfg. Co. for the construction of an extension to its office building. It has not been definitely decided whether the building operations will be started this fall or whether the company will wait until spring. More room has been needed for office purposes for some time.

*Massachusetts, Fitchburg. The addition being built to Mill A of the Parkhill Mfg. Co. is about 120 feet square and will be used for storage purposes.

*Massachusetts, New Bedford. The new quarters of the New Bedford Textile Co. are nearing completion and the company expects to be able to move into the new building the first part of next month.

*Massachusetts, North Adams. Contract for the erection of the addition to the Hoosac Cotton Mills was not awarded at the meeting last week as was expected it would be. The directors have gone carefully over all the details and will probably award contract at the next meeting, which is likely to be held in two weeks, although it may come earlier.

New York, Amsterdam. L. E. Harrower will equip his mill in Amsterdam, known as the Rural Mill, with 15,000 ring spindles for making 2/20s to 2/30s single and ply carded cotton yarns for his own use and for sale. The present equipment of the Rural Mill, which is equipped for making wool, cotton and fleeced underwear, consisting of 12 sets, 50 knitting and 120 sewing machines, will be moved to Mr. Harrower's mills at Hagaman.

New York, Sherburne. Work has been started on additions to the local plant of the Utica Knitting Co., which will increase the power capacity and producing equipment. When the changes are completed the plant will have about double the present floor space. The new machinery to be installed includes 2 additional boilers, a 600 h. p. cross compound condensing engine, 30 revolving flat top cards, 6 pickers and 8 roving machines. Foundations are being laid for two new buildings, one of which will be on the south of the present carding room and the other a new and enlarged engine and boiler room. In connection with the power house a 125-foot chimney will be erected to replace the present one.

North Carolina, Concord. It is reported the Locke Cotton Mills Co. have completed the installation of new machinery equipment, including 4,500 spindles and preparatory machinery.

*North Carolina, Forest City. Improvements in the finishing department of the Florence Mills, recently reported, have been completed.

North Carolina, Marion. Contract has been awarded to Riddle Bros. of Marion by the Marion Mfg. Co. for the erection of new buildings for carding, spinning and weaving, and construction work will be started at once. Machinery contract has been awarded, and if the present plan is followed, the buildings will be completed and equipped ready for the production of goods by March 1, 1912. The capital stock of this company is $500,000. D. D. Little, of Spartanburg, S. C., is president and treasurer and Hugh F. Little is superintendent and buyer.

North Carolina, Shelby. Contract has been awarded by the Lily Mill & Power Co. to the Goode Construction Co. of Charlotte, for the erection of a new building to be equipped as a steam power plant. This improvement is being made to provide for possible low water emergencies. The addition will be 32 by 79 ft., 1 story high, and will cost about $6,000. It will be equipped to generate 300 h. p. R. C. Biberstein of Charlotte, is the architect.

Rhode Island, Pawtucket. Work has been started on the foundations for a new machine shop for the Lorraine Mfg. Co. About $35,000 will be expended for this enlargement.

Mills Starting Up.

Georgia, Lagrange. The Lagrange Mills of the Consolidated Cotton Duck Co., which have been idle for some months past, have resumed operations with practically a full force, with the expectation of continuing for an unlimited period.

Massachusetts, Fall River. Some of the braiding machinery in the Standard Fabric Co.'s plant has been started up on purchased yarn. The cards are now being ground and all the machinery will probably be running within a few weeks.

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*Texas, Cuero. The Guadalupe Valley Cotton Mills, successors to the old Cuero Cotton Factory, began manufacturing October 26. New machinery has been added, including 3,000 spindles and the plant now has 7,000 ring spindles and 160 looms for making dress ducks, drills and similar goods. J. C. Saunders is president and buyer; Joseph Sheridan, treasurer, and O. M. Peters, superintendent. The mill is now operated by electric power.

WOOLEN.

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New Mills.

*Massachusetts, Franklin. It is expected the Clark-Cutler-McDermott Co. will occupy their office at an early date and that the mill will be equipped and in operation in January. Work has already been started on samples.

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Enlargements and Improvements.

Connecticut, Phoenixville. The Phoenix Carpet Co., which began business here about a year ago, is moving to Putnam, and will occupy increased floor space in the Hammond Bldg. It is hoped to begin operations in Putnam by the first of the year.

Connecticut, Staffordville. Extensive improvements have been completed at the Home Mill of the Fabyan Woolen Co. and the plant has been started up on full time. The company is going to make a further improvement by replacing 32 old looms which are in use at present with 30 new looms. New doffers and feeds will also be put on the cards.

Kentucky, Louisville. The Bradford Worsted Spinning Co. has awarded contract for new combing equipment. This business is growing rapidly and for some time the plant has been operated night and day.

Maine, Corinna. A new boiler is to be installed in the Burrill & Clark plant. Chas. F. Bean of Dexter will set it.

Massachusetts, Globe Village. A brick addition 5 stories high is being built to the finishing department of the Hamilton Woolen Co.

*Massachusetts, North Adams. Contract for the electrical work in connection with the installation of looms in the Hoosac Worsted Mills has been awarded to Harold A. Osborne.

Massachusetts, North Andover. New looms are to be installed in the Sutton Mills within a short time. A brick addition to be used as a picker

room is being built to the main building. Business is very good and the plant is operated overtime.

Massachusetts, Pittsfield. James & E. H. Wilson, manufacturers of worsteds, cassimeres, overcoatings and cloakings, have received 12 new looms, which will replace looms that have been in operation in their mill for some time.

*Massachusetts, Pittsfield. Carding machinery for the new addition to the Berkshire Woolen & Worsted Co.'s plant has arrived and is being installed.

*Massachusetts, Rochdale. E. G. Carlton & Sons expect that the 2-story addition, 90 by 30 ft., now under construction, will be completed by Jan. 1. As noted previously, the new space will be used to enlarge the finishing department, allowing a rearrangement of the machinery equipment.

Massachusetts, Uxbridge. A 350 h. p. boiler has been ordered by the Uxbridge Worsted Co., who are also planning the erection of a new office building, 28 by 40 ft., one story high.

Massachusetts, Uxbridge. New dye tubs for both piece dyeing and stock dyeing will be installed in the plant of S. F. Scott. A patent drying machine will also be added to the equipment.

*New Hampshire, Tilton. Good progress is being made in the work of installing new water wheels in the plant of the Elm Mills Woolen Co. No further improvements are contemplated.

*New Hampshire, Tilton. Two new water wheels are being installed in the plant of the Elm Mills Woolen Co., replacing four old style wheels.

New Jersey, Hightstown. Additional machinery is being started up by the Hightstown Smyrna Rug Co., and the company is advertising for operatives to work nights.

Pennsylvania, Philadelphia. Bush & Terry, manufacturers of axminster rugs on 64 looms, have let a contract for the erection of a new building adjoining their present location at Jasper and Thayer Sts., which will be four stories, 44 by 147 feet, and cost $18,000.

Pennsylvania, Wallingford. Fourteen new looms are being installed in the Duray Worsted Mills. The plant has been operated overtime for some time past and is now employing two shifts of help. Men's wear and dress goods are manufactured.

Rhode Island, Bristol. A small addition is to be built to the plant of the Cranston Worsted Mills.

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Mills Starting Up.

*Massachusetts, Chapinville. The Robt. Whittaker Co. has begun operations manufacturing shoddy and doing custom garnetting, picking, carding and carbonizing. This is a new concern incorporated a few weeks ago with capital stock of $50,000, which has taken over the old Northbridge Woolen Mills. James Whittaker is president and Robt. Whittaker, formerly superintendent of the Silurian Mills at Newton Lower Falls, is treasurer, superintendent and buyer. Several changes have been made in the plant, which now contains 4 garnetts, 6 pickers and 14 cards.

Massachusetts, Rochdale. Francis Jealous, who is to be the resident agent for the Rochdale Woolen Mills, recently purchased at auction by the American Woolen Co., is quoted as saying that beginning in about two weeks he will be at the mills daily, looking after the work of getting the plant in shape, also that it is the intention of the American Woolen Co. to run the mill as a 17-set plant and that machinery that was sold to other parties and removed would be replaced by its equivalent.

Massachusetts, Worcester. The S. G. Hall Mfg. Co., which operated the Mt. Battie Mill at Camden, Me., has leased the Kent Woolen Mill at Jamesville, Worcester, and started to make goods for which they had orders while at Camden.

*New Hampshire, West Swanzey. H. W. Brown will operate the old Granite Woolen Mills under the style of the Homestead Woolen Co. and will begin the production of goods at once. The plant contains 5 sets of cards and 40 looms on which flannels will be made, the output being sold by Parker, Wilder & Co. The mill is equipped for dyeing raw stock and piece and finishing, and has both water and steam power. As noted previously, Mr. Brown has resigned as agent for Dexter Richards & Sons Co. of Newport, N. H.

*Rhode Island, Pascoag. The Premier Worsted Mills of Wickford, which have leased the Clear River Mill at Pascoag, have about a dozen looms in operation and expect to have full equipment running in a week. The plant at Wickford will be discontinued. The Clear River Mill was formerly operated by the Falcon Worsted Co.

KNIT.

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New Mills.

*Canada, Ontario, Hamilton. Contract has been awarded by the new Canadian Knitting Co., Ltd., for a mill to cost $20,000, and ground has been broken. J. M. Harris has been elected president; T. J. Stewart, M. P., vice-president; R. R. Simpson, treasurer; R. B. Harris, secretary, and W. H. Magill, manager.

Illinois, Collinsville. Several months ago it was reported that a knitting concern would build a mill here. The mill is now under construction and is to be equipped by the Chester Knitting Mills of Chester, Ill. It will be 3 stories high, 60 by 100 ft. The finishing department and office of the Chester Knitting Mills is to be moved to the new quarters in St. Louis, recently leased for a period of ten years.

*Illinois, Lincoln. The results of the canvass for subscriptions to establish the proposed knitting mill here is proving very encouraging and it seems probable that the required $25,000 will be forthcoming.

*Massachusetts, East Douglas. All the $20,000 preferred stock of the Tally-ho Knitting Co. has been sold at par and for the present the $20,000 common stock will remain in the treasury. Officers have been elected as follows: A. F. Jones,

president; J. W. Wixtead, vice-president; E. A. Wye, treasurer and general manager; B. F. Aldrich, clerk. The directors are Messrs. Jones, Wixtead, Wye, W. R. Wallace and C. J. Bacheler. The company will not build a factory but will lease. As noted, previously, the concern will manufacture knit goods and for the present sweater coats will be the principal product. E. A. Wye is buyer.

*New York, Granville. The branch mill of the Clark Textile Co. of Saratoga Springs is to be completed January 11. It will be 150 ft. long, 41 ft. wide, 1 story high, and will cost $6,000 to build.

Massachusetts, Haverhill. J. M. Buckley purchased some of the equipment of the McCain Hosiery Co., Lynn, and has established a plant at 52 Primrose St., where he will make the same grade of goods made by the McCain Hosiery Co., that is, men's medium seamless cotton hosiery, with the addition of a line of mercerized hosiery for men and women. He will use 1/16, 1/26 cotton and 2/60s and 2/70s mercerized yarn.

New York, New York City. Weiss & Gottfried are equipping a plant at 200 West 23d St. with machinery on which they will manufacture a line of knitted silk neckties.

New York, New York. The Okun Knitted Neckwear Co. has been incorporated with a capital stock of $2,000 to manufacture knitted neckwear and similar goods. The incorporators named are Charles Okun, 203 Broadway, and Bernard and Herman L. Okun, 166 East 7th St.

*New York, Rome. The new Rome Knitting Co. will begin manufacturing at 420 West Court St. about Feb. 1, 1912. Lines of children's, misses' and boys' knit underwear, ribbed two-piece garments and union suits will be made on initial equipment of 12 knitting and 20 sewing machines. As noted previously, the new company has capital stock of $30,000 and has organized with J. Orley Stranahan, president; Albert Krebbs, treasurer, and T. S. Griffin, manager, and with Mr. Krebbs attends to the buying. Mr. Griffin is at present connected with the Rome Textile Co., but will leave this connection Dec. 1. The product will be sold by M. Zumkley, New York City.

Pennsylvania, Philadelphia. Cohn & Summerfield, who have been manufacturing a line of skirts from piece goods, have recently put in a department in which they are manufacturing aviation caps, skirts and other kinds of fancy hand knit goods for which they are buying woolen and worsted yarns. They are selling the production direct.

Pennsylvania, Philadelphia. A new concern known as the Metropolitan Knitting Mills has begun manufacturing at 2829 Kensington Ave. Isadore Rosenstein is proprietor and has installed 4 flat knitting machines on which sweater coats are made. Three additional machines will be installed within a short time. The product is sold direct.

Pennsylvania, Philadelphia. The Keystone Glove Co. is the name of a new concern which will start in the manufacture of knitted gloves. Equipment is being bought. They are now located at 123 S. 3d St., but expect to remove within a short time to another and permanent location.

Pennsylvania, Philadelphia. The Edwards & Troth Co., which has been manufacturing a line of neckties from silk piece goods, has installed a number of knitters on which they are also making knitted silk neckties and selling direct. They are located at 1024 Filbert St.

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Enlargements and Improvements.

Canada, Ontario, Hamilton. J. R. Moodie & Sons, Ltd., manufacturers of "Hygeian" underwear, have purchased the entire plant, stock and good will of the Princess Underwear, Ltd., also of Hamilton. This will give a large increase in the production of Moodie & Sons.

Georgia, Marietta. The new mill of the Marietta Knitting Co., erected to take the place of the old wooden mill in which they have been located for the past fourteen years, has been completed. The new structure has 40.000 square feet of floor space and is of the most modern design with every convenience for manufacturing. The machinery will be driven by electric motors. There will be a small increase in the capacity on fine gauge goods, giving a total equipment of 160 knitting machines, 12 of which will be new. This concern manufactures men's cotton half hose of the "Radium" brand. The capital stock is $100,000, all paid in. R. H. Northcutt is president; Ralph W. Northcutt, vice president; Jas. J. Daniell, secretary and treasurer, and John H. Barnes, superintendent. The board of directors attends to the buying.

*Georgia, Rome. Since early in the summer the Rome Hosiery Mills have added a line of misses' hosiery and increased their equipment to 277 knitting machines, 35 loopers and 14 sewing machines. They buy 11s, 14s, 16s, 18s, 13s and 50s yarns. H. R. Berry is secretary, treasurer and buyer.

Iowa, Shenandoah. Five new knitting machines have been installed in the plant of the Shenandoah Hosiery Mills. A further increase is contemplated.

*Massachusetts, Pittsfield. Work has been started on the foundation of a new storage shed for the Musgrove Knitting Co. This is to replace the building damaged by fire in August.

Minnesota, Minneapolis. Another large addition to the plant of the Northwestern Knitting Co. has been started on Aldrich Ave. This will be 5 stories high, of brick and concrete construction, and will be used as an auxiliary building for finishing and water purifying. An addition to the power plant is also in course of construction. The large addition will be completed early in 1912, and will represent an outlay, including cost of equipment, of approximately $100,000. Mr. Couper, the vice-president of the company, states that the business is 25 per cent. ahead of any previous year and the certainty of a further increase in 1912 is shown by advance orders that are being received.

Pennsylvania, Philadelphia. The Quaker City Sweater Mills, Inc., with a capital of $26,000, B. E. Block, president and treasurer, and N. E. Kahn, superintendent and buyer, have increased their equipment to 16 flat and 32 circular knitters and 26 sewing machines, on which they are manufacturing boys', men's and women's sweater coats of worsted yarn, which they are selling direct and through L. Rosen, Philadelphia, and Armstrong & Co. and Jos. M. Kahn New York. They are very busy making deliveries for immediate shipment and taking orders for the coming season.

Pennsylvania, Philadelphia. The National Knitting Works, 522-534 Jefferson St., report being very busy on men's and women's cardigan jackets and men's, boys' and women's coat sweaters. They have increased their mechanical equipment to 135 knitters and 63 sewing machines.

Pennsylvania, Philadelphia. Ten latch needle knitting machines have recently been installed on the plant of the Cheltenham Knitting Co., which gives a total of 10 spring needle and 10 latch needle machines. The concern is now manufacturing both flat and ribbed underwear for men, using cotton, lisle and mercerized yarn. Wm. P. Davis is manager.

Pennsylvania, Philadelphia. A change has been made in the product of the Bridesburg Hosiery Mill from cotton and mercerized hosiery to silk goods only. The equipment has recently been increased to 40 knitting machines. This company will soon be incorporated.

Pennsylvania, Philadelphia. The Ideal Knitting Mills, of which Max Cohen is the proprietor, located at 16 South 3d St., operating 14 knitters on wool, worsted and merino sweater coats, will soon remove to other and larger quarters, where a considerable number of new knitters and other machines used in the manufacture of this grade of goods will be installed. S. Martin, 214 Drexel Bldg., is the selling agent.

Pennsylvania, Philadelphia. The Rudolph Blankenburg Co., operating the Olympia Mills at 24th and Ellsworth Sts., in addition to manufacturing cotton wool and down comforts, have put in a department for the manufacture of woolen and worsted hand knit sacques, sweaters and hoods which they are selling direct.

*Rhode Island, Pawtucket. Fifty-five new knitting machines will be added to the equipment of the Pawtucket Hosiery Co. on completion of the addition to the plant of the Hemphill Mfg. Co. This addition is not being built wholly for the use of the hosiery company, but they will occupy part of the floor space. This enlargement will give a total of 125 knitting machines for manufacturing men's hosiery. As noted recently, the Pawtucket Hosiery Co. has been incorporated with authorized capital stock of $100,000 and the following officers have been elected: Wm. S. Carter, president; Geo. H. Lumb, treasurer, and Wm. Comery, superintendent. Messrs. Lumb and Comery attend to the buying. The machinery is operated by electric power and there is a complete dye house.

Utah, Ephraim. The Sanpete Knitting Works are still planning to increase their capacity and are interested in finishing machinery. Men's, women's and children's knit cotton and wool underwear is manufactured. The present equipment is 6 knitting and 7 sewing machines.

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Mills Starting Up.

Massachusetts, Ipswich. The Essex Hosiery Co., incorporated a few weeks ago with capital stock of $500,000, has taken over the old plant of the Brown Stocking Co., and is making high grade silk and mercerized hosiery for men and women. The plant contains 350 knitting machines and 20 sewing machines, dye house and steam power plant. The new company sells direct. A. S. Porter, Jr., Boston, is president; Chas. E. Ames, Ipswich, treasurer, and H. B. Brown, superintendent. One hundred operatives are employed at present, while the total capacity is 400 hands.

Pennsylvania, Allentown. It is reported that the Lehigh Knitting Mills, located at 722 Linden St., containing 15 knitters and 10 sewing machines, will soon be started up by a Mr. Thompson, on women's underwear. The mill has been shut down for some time.

SILK.

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New Mills.

Pennsylvania, Egypt. Work will soon be started on the erection of a mill for the J. G. Feldhege Silk Mfg. Co., and by Feb. 15 it is expected the building will be ready for occupancy. The new company is controlled by E. T. Zellner, of the Zellner Contracting Co. and Mr. Feldhege, who was formerly president and manager of the Central Silk Mfg. Co., Inc., of Siegfried, Pa., and also connected with the John H. Meyer Silk Mfg. Co. of Northampton, Pa. The new mill will be one story high, of brick construction, 60 by 72 ft., and will be equipped with 120 looms for weaving broad silks.

*Pennsylvania, York. Manufacturing has been started by the Souter Silk Mfg. Co., making broad silks. This concern is located in the old plant of the York Cotton Co., which went out of business early in the year owing to the death of its president. The new Souter Co. is headed by Sydney H. Souter, who formerly controlled the Sydney H. Souter Silk Co. of Milton, Pa., which was purchased by the Susquehanna Silk Mills last June and operated by them as a branch. The new plant here has about 25 looms. It is expected that this number will be increased to 150 looms. John F. Kissinger is president; J. Howard Manifold, vice-president, and Herman Shetter, secretary and treasurer. Mr. Souter is manager.

*Virginia, Richmond. The Virginia Silk Co. has been incorporated with capital stock of $250,000 to manufacture silk ribbons and has organized with Williamson Talley, president; Granville G. Valentine, vice-president, W. S. Wortham, secretary-treasurer, and W. M. De Pars, general manager. The site for a plant has not been selected, but it is reported that 48 looms and accompanying equipment will be installed for the manufacture of silk ribbons.

New Publications

[Any work noticed under this head can be obtained through the office of this journal.]

Broken Fleece; by Henshaw Jackson; 156 pages, 5 by 7; William Brooks & Co., 17 Castlereagh St., Sydney, Australia. Price $1.

This is a series of short articles dealing with the sheep and wool industry of New South Wales written by a man who has spent his life in close touch with the business. His articles were originally contributed to the Stock and Station Journal and incited much favorable comment. For the wool breeder it is full of valuable facts and for the manufacturer or wool merchant many of the articles are of decided interest for the view they give of the conditions in Australia.

The Bleaching, Dyeing and Finishing of Flax, Hemp and Jute Yarns and Fabrics; by H. R. Carter; 164 pages 5 1/2 by 8 1/2; Bale & Danielsson, Ltd., Great Titchfield St., London, England. Price $1.25.

This book contains a great deal of valuable information on the subject indicated by its title. It treats on the subject of hank bleaching, the preparation of lyes, sours and chemic, linen cloth bleaching by the different known processes, also mentioning the different kinds of fabrics. A chapter is devoted to bleaching materials and the question of dyeing this class of goods is considered at length, as well as the printing and finishing. The material from which this book is compiled appeared originally in the Flax, Hemp and Jute Trades Journal.

Through the Mill; by Al Priddy; 289 pages, 5 1/2 by 8; The Pilgrim Press, Boston, Mass.

This is an autobiography of a worker in the New Bedford cotton mills. It is written in a simple and straightforward manner, and is of value as a study of actual industrial conditions, shedding much light on the labor question. Its chief charm lies in the fact that it is a fascinating story of real life.

BUSINESS LITERATURE

Conoidal Fans; The Buffalo Forge Co., Buffalo, N. Y.

This attractive 64-page catalogue describes and illustrates the new type of multiblade fan which this company is bringing out. It describes its many advantages, its construction, the character of work to which it is adapted and gives facts and figures which are of immediate interest and reference value to those interested in this subject.

Circular Rib Knitting Machinery; Nye & Tredick Company, Philadelphia, Pa.

These manufacturers of circular rib knitting machinery have issued a catalogue illustrating their rib knitting machines, describing the uses for which they are intended, and containing also a complete, illustrated, numbered list of machine parts, making it very simple for those wishing to order knitting machinery supplies. The catalogue, which is 8 by 6 inches, with a flexible cloth cover, is quite a novel departure from the usual type of catalogue, its thirty-three pages of coated paper being bound securely together with clips, the whole being remarkably compact, and making it possible to add any supplements the company may send out from time to time; the allowance for more matter, and the strong covers having plenty of room for twice as many pages as the catalogue now contains.

A Modern Transmitter; The Morse Chain Co., Ithaca, N. Y.

A 16-page booklet treating of the advancement in power transmission. This booklet exploits the advantages of the Morse Silent-Running High Speed Chains, and contains valuable information for those contemplating power transmission improvements. Five photographs show the Morse Silent Chain in operation, and by means of a diagram and explanation the superior advantages of the Morse Chain may be readily appreciated.

Cling-Surface; The Cling-Surface Company of Buffalo, N. Y.

An interesting folder which should prove interesting to mill men having trouble with slipping belts, or those wishing to better their belting conditions. The booklet contains twelve illustrated testimonial letters from well-pleased buyers of Cling-Surface belt dressing, also a list of prominent users of Cling-Surface.

"Maximum" Silent Chains for Textile Mills; The Link-Belt Co., Philadelphia, Pa.

A very attractive 32-page booklet describing and illustrating the "Maximum" silent chain, which is particularly suited to driving textile machinery, as it gives a smooth, positive and steady drive, without the noise and shock of gears and without the slip and consequent loss of lower of leather belts. The "Maximum" chain has been used successfully on blowers, brushing machines, calenders, dryers, fans, fullers, hosiery presses, knitting machines, line shafting, looms, loopers, mules, nappers, pickets, pumps, ribbers, sewing machines, singeing machines, spinning frames, tentering machines, twisting frames, washers, willows, winders, etc.

The Peerless Chain Block; The Exeter Machine Works, Pittston, Pa.

This is a folder giving sizes, capacity, lift and prices of Peerless hoists, which are sent on free trial.

Cotton and Linen Cloth. The Cassella Color Co., New York.

A folder showing 128 colorings and illustrating mode shades on cotton and linen cloth dyed in the piece. There are many valuable suggestions for combinations.

Industrial Notes

NEW CARPET YARN AGENCY

Messrs. T. J. Porter & Sons, 119 South Fourth St., Philadelphia, Pa., have recently become the sole American agents for David Gibb & Son, of Dundee, Scotland, for their flax and jute yarns for the carpet trade and are now in a position to supply the wants of American manufacturers for this grade of yarn and can promise prompt deliveries. The Gibb's yarns are known for their high standard. Messrs. Porter & Sons have become well known through their agency for Messrs. Robert Marsland & Co., Ltd., fine cotton spinners and doublers of Manchester, and manufacturers of mercerized yarns for hosiery and underwear in fine and medium counts. They have instituted the practice of selling these yarns under the net weight system, which is very popular with the buyers. They are also selling agents for Lindsay Thompson & Co., Ltd., of Belfast, Ireland, whose linen yarns are now extensively used by knitting mills. In developing the linen yarn trade with the knitting mills they have made a careful study of the practical working of the yarn on the machines and have frequently been able to offer suggestions to manufacturers which have been of great assistance in enabling them to handle linen yarns to give the best results.

A NEW SOAP PLANT

The new soap plant of Harding & Fancourt, Inc., contains the best and most up to date soap machinery that could be obtained by this concern, whose long experience makes them well fitted to select the most meritorious appliances. The new plant, to which they have recently removed, is located at 516-18 South Delaware Ave., Philadelphia.

To those manufacturers who are using chipped soaps, perhaps the most interesting machine in this new plant is the Proctor soap dryer. This dryer takes the hot soap as it comes from the kettle, cools, crushes and dries it, and delivers the soap in bone dry chips ready for the barrels. The adjustment of this machine is so delicate that the chips are always of a uniform density, thickness and dryness. This will be recognized as an important feature by users of chipped soaps who want a uniform and high class article.

The soap kettles for this new plant were designed and built by one of the most soap expert engineers in the country. These kettles are of such a size and character that carloads of soap can be turned out at one boiling, thereby insuring to buyers of carload lots and to buyers of less than carload lots, absolute uniformity of each shipment.

Harding & Fancourt, Inc., are direct importers of olive oil, olive oil foots and palm oil. This feature of their business, together with the systematic and economical machinery they have installed, places them in an excellent position to sell their products at a reasonable price, quality considered.

Besides these other products their line includes softeners, sizing and finishing compounds, soluble and Turkey red oils.

The success of Harding & Fancourt, Inc., has been rapid and substantial and they consider it due largely to the fact that they have put on the market only such products as they could stand back of in every respect.

IRISH LACE FOR CORONATION AT DELHI

There has just been completed and forwarded to London a Court train of Irish lace made at the Presentation Convent, Youghal, for the Queen. This Court train is a gift from the ladies of Belfast, and has been made for Her Majesty's crowning at the durbar. The train is of the finest needle point, and has taken 50 workers 6 months to complete. It is 4 yards long, nearly 2 yards wide at the bottom, and tapers up to shoulder width at the top. It has been estimated that there are over 5,500,000 stitches in the whole and over 20,000 yards of thread. The thread used was so fine as to be scarcely visible in the workers' hands, numbers 300, 200 and 150 thread being employed throughout. It is the most magnificent piece of work ever made in Youghal, or at any other lace center, in modern times. The design is of roses and fuchsias and is very beautiful.

A BIG CONTRACT AWARDED

The Massachusetts Cotton Mills of Lowell, Mass., have again been awarded the big contract for khaki uniform cloth for the United States army. Contracts calling for one million yards were awarded to them in November. This is the second big contract the Massachusetts Mills have received for this fabric from the Government. The War Department has done everything to encourage cotton manufacturers to equip their plant and to bid for these contracts under the terms of the specifications, but few have done so. The Massachusetts Mills made careful preparations and spent many thousands of dollars in equipping their dyeing plant for this work, and have been able to produce a fabric with Indanthrene colors dyed on raw cotton which has withstood the severe tests of laboratory and service in the field.

THE DRAPER CO.'S NEW OFFICE BUILDING

The Draper Co. moved into its new office building in Hopedale in the middle of November. The building is as large as many a good sized factory. It conveys the impression of substantial comfort rather than ornate luxury. The architectural design is pleasing, but the main object has been to provide spacious, convenient and well lighted quarters for the office staff. The building is just across the road from the old offices and is connected with the works by an underground passage. The heating, lighting and ventilating plant was designed by French & Hubbard.

The main office is one immense room lighted on three sides by windows occupying practically the entire wall surface except the necessary pillars. Not content with sample side light the ceiling is paneled with prism glass protected from the weather by skylights above. The artificial illumination is the general overhead system supplemented by desk lighting. The Tungstan lamps with Holophance globes diffuse ample light into every corner of the big room. The arragement of the working force is planned so that the work proceeds systematically.

Opening from one side of the main office is an enormous vault built as an ell and constructed so as to be fireproof and burglar proof. This vault is 45 feet square, inside dimensions, and is in itself a big room lined with shelves for the storage of records, correspondence, etc. A steel vault lends additional protection to more important papers.

Separated from the main office by a wide hall running the whole length of the building are the private offices of the officials of the company, all very spacious and with a pleasant outlook. There is a big reception room, board of directors room and other consultation rooms. A wide gallery above the hall and private offices runs the whole length of the building. President Dutcher's office occupies the corner of the floor, and overlooks the main office, with which it is connected by elevator and stairway.

In the basement, which is above ground, are the big storage rooms for supplies, catalogues, etc., a coat room for the men of the office staff, lavatories, toilet rooms, a big room attractively furnished for the salesmen when they are at the home office, and the heating and ventilating plant.

The building is of red brick. The inside finish and floors are of oak and the furniture and fixtures, which have been especially designed, are of the same material. The staff comprises about one hundred men and the conditions under which they do their work are as perfect as it seems possible to design.

REMOVAL

L. H. A. Schwartz & Co., Textile Machinery and importers of Egyptian, Indian and China Cotton, have removed from 53 State St. to more spacious quarters. They now occupy a suite of rooms consisting of a general business office, private conference rooms, and large, well-lighted sample rooms, in the Marshall Bldg., 40 Central St., corner of Broad St., Boston, Mass.

HYGROSSO EQUIPMENT

The Southern office of John W. Fries, of which John E. Schott is in charge at Charlotte, N. C., reports that for the week ending December 1 contracts were closed with the following mills for Hygrosso equipment: Hadley-Peoples Mfg. Co., Siler City, N. C.; Monarch Cotton Mills, Dallas, N. C.; Magnolia Cotton Mills, Charlotte, N. C.; Linden Cotton Mills, Davidson, N. C.; Lowell Cotton Mills, Lowell, N. C.; Rhyne's Cotton Mill, Lincolnton, N. C.

CONTRACTS FOR FOSTER SUPERHEATERS

Among recent contracts received for Foster superheaters built by the Power Specialty Co., 111 Broadway, New York, are the following:

New York, New Haven & Hartford R. R. at Cos Cob and Bridgeport plants, 10,620 h. p. in Bigelow-Hornsby and B. & W. boilers; Delaware, Lackawanna & Western R. R. at Loomis Colliery, 900 h. p. in Erie City boilers; International Harvester Co., at Plano and Weber plants, 2,800 h. p. in Edge Moor boilers; Associated Pipe Lines, 3,000 h. p. in Edge Moor boilers; Haskell-Barker Car Co., 3,200 h. p. in McNuaull & B. & W.; J. R. Nutt Plant, Ft. Worth, Tex., 4,000 h. p. in Edge Moor boilers; Clark Thread Co., 1,000 h. p. in Stirling boilers; Indiana & Michigan Traction Co., 3,200 h. p. in Wickes boilers; Wilmington & Philadelphia Traction Co., 2,400 h. p. in Edge Moor boilers; Penn Central Light & Power Co., 2,400 h. p. in Edge Moor boilers; Citizens' Light & Power Co., Montgomery, Ala., 3,200 h. p. in Stirling boilers.

NEW YORK OFFICE

Johnson & Walker of Providence, R. I., manufacturers of cotton yarns, have opened a New York office at 53 Leonard St. The office and sales department will be under the management of Albert W. Gregory, a well known yarn broker. He will have the entire charge of selling the Johnson & Walker product in and about New York.

CONTINENTAL LATCH NEEDLE CO. INCORPORATES

The business of the Continental Latch Needle Co. of 120 Liberty St., New York, previously carried on by E. W. S. Jasper, has been incorporated under the laws of New York State. The officers are as follows: E. W. S. Jasper, president and general manager; T. H. Groz, treasurer.

ROSIN SOAP AND SIZE

For use in bleacheries and print works and in starching fabric, Rosin Soap and Size give very satisfactory results. These superior articles, made by the Arabol Mfg. Co., N. Y. City, are perfectly uniform, free from impurities and thoroughly filtered.

"FENESTRA" WINDOWS

A conspicuous feature of the new group of factory buildings being built for the Hupp Motor Car Co. in Detroit, is the large expanse of Fenestra steel windows, which will be glazed with ribbed glass to give diffused daylight through all the working floors, without shadows, and no glare, doing away with any need for shades or awnings, even on the south and west exposures.

The Ide Cotton Mills, of Jacksonville, Ala., have opened an office in New Bedford, at 12 Clifford St., with Joseph C. Nowell in charge. They make yarns from 30s to 40s, singles and ply.

A CLEVER BRAND

J. P. Quinlan & Co., 346 Broadway, New York City, have associated themselves with the originators of the Mutt & Jeff cartoons running so successfully in hundreds of newspapers throughout the country, and have formed the Mutt & Jeff Hosiery Co., of New York City.

They are putting this brand on the market to the jobbing trade in a fifteen-cent combed Egyptian and twenty-five-cent mercerized and silk plaited half hose. Each number heavily reinforced where it is necessary to meet the requirements of an A 1 good wearing sock.

This company has become connected with mills of good reputation, to be known as Mutt & Jeff Hosiery Mills, Nos. 1, 2 and 3. It is the intention of the company to furnish different cuts and drawings of the widely known cartoons made by the well known artist, Bud C. Fisher.

The advertising cost which would be required to make Mutt & Jeff known as well as they now are, having published in every large city in the United States, would run into millions.

Buyers when approached on this proposition have been very optimistic.

MILLS BEING RENOVATED

The United States Gutta Percha Paint Company, Providence, R. I., reports that many of the mills are taking advantage of the lull in business to have the ceilings and walls of their mills painted with Rice's Mill White, one large order for the South being for two carloads.

H. W. JOHNS-MANVILLE COMPANY

Owing to the fast increasing business in Birmingham, Ala., the H. W. Johns-Manville Co. have found it necessary to change the location of their office from 1220 Empire Building to 606 Chamber of Commerce Building, this address being better adapted for their requirements.

This office will continue under the management of W. H. Fleming, who is favorably known throughout this section of the country, having been connected with the New Orleans branch of this company for a considerable time.

A complete line of well-known J-M Asbestos and Magnesia Products, Electrical Supplies, Packings, etc., will be handled from this office.

LICENSES FOR UNION SUITS

Several manufacturers have taken out a license to make the closed crotch union suit which was brought out by the Cooper Underwear Co., Kenosha, Wis., last year and were very successful. The Cooper Manufacturing Co., of Bennington, Vt., has taken a license to make this suit for men in their spring needle fabric. Penman's, Limited, have a license for Canada to make the suit for men, women and children, also sleeping garments. The Goodenow-Brookfield Knitting Co., of Kansas City, have a license to make union suits of this pattern in nainsook and woven fabrics for summer wear.

A NEW SILK FIRM

A. P. Villa has withdrawn from the Villa-Stearns Co., and formed a partnership with his brother, Silvio Villa, for the purpose of selling raw, thrown and dyed silk in skeins or on quills, cones or beams. Silvio Villa was associated with his brother during his connection with the Villa-Stearns Co. The firm will have its factory at Passaic, N. J., and its office at 487 Broadway, N. Y.

Messrs. Villa-Stearns Co. make the following announcement: "To our great regret we have to announce that A. P. Villa has determined to sever his connection with us on Nov. 30, 1911. Our business will continue to be conducted at the same place and by the same organization at 487 Broadway."

SPINNING COTTON BY MOUSE-POWER

Even a mouse may earn its keep and yield a profit to man, if given the opportunity. In these days of progress in labor saving (says the "Scrap Book"), it might be worth while for some one to try the experiment, suggested by the man who first used mouse-power. He was an ingenious Scotchman by the name of David Hutton, a native of Dunfermline. He erected a small mill at Dunfermline in 1820, in which mice supplied the power. In an old pamphlet of the time, called the "Curiosity Coffee Room," he gives an account of the way the idea first came to him. "In the summer of 1812," he wrote, "I had occasion to be in Perth, and when inspecting the toys and trinkets that were manufactured by the French prisoners in the depot there, my attention was involuntarily attracted by a little toy-house with a wheel in the gable of it that was running rapidly round, impelled by the gravity of a common house mouse. For one shilling I purchased the house, mouse, and wheel. Enclosing it in a handkerchief, on my journey homeward I was compelled to contemplate its favorite amusement. But how to apply half-ounce power (which is the weight of a mouse) to a useful purpose was the difficulty. At length the manufacture of sewing thread seemed the most practicable."

Though Mr. Hutton proved that an ordinary mouse would average a run of ten and a half miles a day, he had one mouse which ran the remarkable distance of eighteen miles in that time. A halfpenny's worth of oatmeal was sufficient for its food for thirty-five days, during which time it ran 362 miles. He kept two mice constantly engaged in the making of sewing thread for more than a year. This thread mill was so constructed that the mouse was able to twist, twine, and reel from 100 to 120 threads a day, Sundays not excepted. To perform this task it had to run ten and a half miles a day, which it did with perfect ease every other day. On the halfpenny's worth of oatmeal, which lasted for five weeks, one of these little mice made 3,350 threads twenty-five inches long, and as a penny was paid to women for every hank made in the ordinary way, the mouse at that rate earned ninepence every six weeks. Allowing for board and for machinery, there was a clear yearly profit from each mouse of over six shillings.

It was Mr. Hutton's intention to apply for the loan of Dunfermline Abbey, which was empty, where he planned to set up ten thousand mouse mills, and still have room for the keepers and several hundreds of spectators; but this wonderful project was never carried out because of the inventor's sudden death.

MOTOR TRUCKS FOR FACTORY USE

An organization for selling motor trucks and furnishing service to their owners has been incorporated as the International Motor Company under the Delaware laws.

The new concern, which is capitalized at $10,000,000, is to have the commercial management and general supervision of both companies. The manufacturing will be carried on as at present. The Saurer motor truck plant at Plainfield, N. J., and the Mack Brothers' plant at Allentown, Pa., are to be continued as distinct organizations. A combined output of 2,000 trucks from the two factories is planned for the coming fiscal year.

Sales branches and agencies of both the Saurer and Mack Brothers' Companies will become branches and agencies of the International Motor Company, which will also conduct in all of the principal cities service stations for the most thorough inspection and maintenance of both Saurer and Mack trucks.

The officers of the International Motor Company are: President, C. P. Coleman; Chairman of Board, W. D. Sargent; Vice-President, J. M. Mack; Treasurer, F. C. Richardson; Secretary, Vernon Munroe.

The general offices of the International Motor Company will be at 30 Church St., New York City.

There is a special interest in this latest development in the motor truck industry in America which brings into association two of the oldest—perhaps the two oldest—motor truck concerns in the world.

Adolph Saurer began building his trucks in 1894. The Mack Brothers turned out their first truck in 1900.

The first Saurer truck was built for the transportation service of the inventor's embroidery machinery factory in Switzerland and only four were produced in the first four years. Then he was induced to build the trucks for some of his friends—and, by the way, several of these trucks are still in regular use. This was the beginning of the Saurer truck as a commercial product.

Four Saurer factories were established in Europe at intervals, and the fifth, which is now associated with the International Motor Co., was started in this country under license a few months ago.

The beginnings of the Mack Brothers' enterprise were curiously similar to those of the Saurer. In their first year the Macks built but one truck and it was not until their fourth year that their annual output reached eight cars. The Mack Brothers' factory now turns out four complete motor trucks a day and its product is used by some of the largest corporations in the country. The American Telephone & Telegraph Co., for example, has fifty-one Mack trucks in service; the Texas Oil Company has forty-two Mack trucks and the H. B. Claflin Co. fifteen Mack trucks in use. The Ward Bread Company has eight in service, with twenty more on order.

NATIONAL MOTOR CAR SHOWS

What will probably be the most notable exhibition of motor vehicles ever displayed will take place at the national shows in New York, January 10th to the 20th, and in Chicago from February 5th to 10th. This will be the twelfth annual display made by the industry to show its progress from year to year and to give to the prospective purchaser an opportunity to study and compare the constructional characteristics of the various makes and models.

The show promoters have recognized the importance of the time element and have segregated the exhibits of industrial and commercial vehicles, giving a separate week for them.

It will be interesting to note that more than 4/9 of the total number of cars displayed will be of a commercial nature, which will include almost every type and size of power vehicle designed for use on the public roads, from motor-cycle parcel carriers of 500 pounds' capacity to ponderous trucks of ten tons' capacity. Beside the more common types of trucks and wagons, there will be a number of special bodied trucks for the manufacturers' use, trucks fitted with power winches for hoisting, self emptying coal and lumber trucks and many other types for individual and corporation service purposes.

EIGHT WEEKS' COURSE IN TEXTILES

In addition to the regular courses of instruction, an eight weeks' course in carding, spinning, warp preparation, plain and fancy weaving designing, and dyeing is offered by the Textile Department of the Agricultural and Mechanical College, West Raleigh, N. C.

The course will begin Jan. 8, 1912, and the total cost for the whole course will be about $35.00, which will include board, room rent, etc.

This school has an excellent equipment and for the past four years has been awarded the Students' Medal by the National Association of Cotton Manufacturers.

Further particulars can be obtained from Thomas Nelson, Director.

SEYDEL MANUFACTURING CO. ENLARGE

The Seydel Mfg. Co., Jersey City, have outgrown their present quarters and have purchased a large plot of ground in Jersey City on which they will build an extensive plant early in the spring.

It is only a comparatively short time since this concern opened northern headquarters and their success in the textile field has been substantial and rapid. Their trademark, "Sizol," is now widely known in connection with sizings, softeners, soaps and other specialties. They study each case and its special requirements, and then like the physician, they prepare a prescription especially designed to meet the situation, and manufacture the right goods for it.

Recent Textile Patents

BOBBIN and Spindle Connector. 1,007,239. John Roney and John C. Rae, Woonsocket, R. I.

BOBBIN-LATHE. 1,008,747. Reuben G. Smith, N. Newport, N. H.

BRAIDING MACHINE Stop Device. 1,007,904. Simon W. Wardwell, Providence, R. I.

DOUP-HEDDLE for Leno-Weaving. 1,006,563. Albert E. Kelmel, Providence, R. I.

DYEING APPARATUS, Liquid. 1,006,471. Hubert Eicken, Grevenbroich, Germany.

DYEING MACHINE, Skein. 1,008,251. William H. Fletcher, Paterson, N. J.

EMBROIDERING MACHINES. Device for Holding the Material in. 1,008,736. Morris Schoenfeld, Rorschach, Switzerland.

FABRIC TREATING Compound. 1,008,332. Seymour M. Hermann, New York.

KNIT GARMENT. 1,009,606. John H. Way, St. Davids, Pa.

KNITTING MACHINE. 1,008,280. Thomas F. Morris, Waterford, N. Y.

KNITTING MACHINE Attachment. 1,007,264. Henry Birnbaum, New York.

KNITTING MACHINE, Elastic-warp. 1,009,446. Herbert C. Shaw, Chicago, Ill.

KNITTING MACHINE, Circular. 1,007,494. Robert W. Scott, Leeds Point, N. J.

KNITTING MACHINE Dial Connection and Cutting Attachment. 1,007,629. George L. Ballard, Norristown, Pa.

KNITTING MACHINE Drop Stitch Mechanism. 1,008,751. Friedrig H. Stoehrel, Reading, Pa.

KNITTING MACHINE, Web-holder for Rib. 1,008,739. Robert W. Scott, Leeds Point, N. J.

KNITTING MACHINE Yarn Twisting Attachment. 1,006,880. Harry W. West, Plymouth, Mass.

KNITTING MACHINE Striping and Embroidering Mechanism. 1,008,752. Friedrig H. Stoehrel, Reading, Pa.

LOOM ATTACHMENT. 1,006,559. Victor H. Jennings, Worcester, Mass.

LOOM SHUTTLE, Weaving. 1,008,832. Maurice and Victor Lemarchand and Victor Montet, Rouen, France.

LOOM SHUTTLE, Automatically-threading. 1,006,801. Osaac Snow, Lawrence, Mass.

LOOM WEFT Replenishing Device, Weaving. 1,007,143. August Regal, Vienna, Austria.

NEEDLE THREADER. 1,008,731. William J. Rogers, Plainfield, N. J.

PILE FABRIC, Warp. 1,006,917. Henry Dawson, Bolton, England.

SHUTTLE HEATER. 1,008,665. Norbert Morneau, Holyoke, Mass.

SPINDLE LOCK. 1,006. Laroy S. Starrett, Athol, Mass.

SPINNING-FRAME Whirl. 1,007,614. William St. Peter, Manchester, N. H.

SPINNING MACHINE. 1,008,702. Frederick S. Culver, Taunton, Mass.

SPINNING MACHINE Attachment. 1,008,144. Howard S. Hawley and James W. Palmer, Jackson, Mich.

SPINNING or Twisting Machines, Separating Means for. 1,008,066. Alonzo E. Rhoades, Hopedale, Mass.

SPINNING, Twisting and Like Machines, Spindle Support for. 1,008,855. Albert H. Morton, Lowell, Mass.

TEXTILE Material, Conditioning. 1,008,613. Isaac E. Palmer, Middletown, Conn.

WINDING REEL. 1,006,784. Jerome Payet, Paterson, N. J.

WOOL CLEANING Machine. 1,008,426. John R. Milson, Watertown, Mass.

WOOL, Scouring or Cleaning. 1,006,726. William J. Croston, Lawrence, Mass.

WOOL, Process for Treatment of. 1,008,249. Emil Elsasser, Langerfeld, Germany.

WOVEN FABRIC. 1,008,930. William T. Smith, Philadelphia, Pa.

YARN TESTING Machine. 1,008,308. James R. Greenwood, Briercliffe, Bolton, England.

WINDING FRAME. 1,005,990. John McCrea, Millbury, Mass.

YARN CHAINS. Unwrapping Mechanism for. James W. Connelly, Methuen, Mass.

APPLICATIONS FOR REGISTERED TRADE MARKS

These applications have been officially published by the U. S. Patent Office, so that any person who believes a registration would interfere with established rights, may have an opportunity to object within the specified time.

55,398. Toweling. Mark: 7050. Owner: Blodgett, Ordway & Webber, Boston, Mass.

58,509. Hosiery, petticoats and muslin underwear. Mark: Golden Rule. Owner: Swenson Bros. Co., Omaha, Neb.

52,547. Knit sweaters. Mark: Pop Lar. Owner: Union Mills, Hudson, N. Y.

53,868. Hosiery. Mark: Novo Silk Hose. Owner: The Novelty Hosiery Co., Allentown, Pa.

54,496. Napped piece goods of cotton. Mark: B M. Brogon Mills, Anderson, S. C.

57,518. Crash, cotton crash, linen crash, etc. Mark: Round Tower. Owner: J. W. Goddard & Sons, New York.

58,275. Woven broad silk piece goods. Mark: Pussy Willow. Owner: M. C. Migel & Co., New York.

49,084. Hosiery. Mark: May Queen. Owner: Chas. Chipman's Sons, Easton, Pa.

53,178. Cotton thread and yarn. Mark: Wolf. Owner: The Spool Cotton Co., Newark, N. J.

53,179. Cotton thread and yarn. Mark: Anvil. Owner: The Spool Cotton Co., Newark, N. J.

54,110. Cotton piece goods. Mark: Atlas. Owner: Wm. Simpson Sons & Co., Philadelphia, Pa.

55,151. Cotton thread and yarn. Mark: Trumpet. Owner: The Spool Cotton Co., Newark, N. J.

57,830. Worsted, woolen and part-woolen piece goods. Mark: M. T. Stevens & Sons. Owner: M. T. Stevens & Sons Co., North Andover, Mass.

58,411. Stockings. Mark: Fleur de Lis. Owner: O'Callaghan & Fedden, New York.

58,553. Hosiery. Mark: Kno. Owner: Miller & Sons Co., Philadelphia, Pa.

58,570. Worsted and merino yarn. Mark: The Good Shepherd. Owner: Andrew Adie, Newton, Mass.

55,260. Hosiery. Mark: Jonnie Jones. Owner: John M. Given, Inc., Pittsburg, Pa.

55,519. Cotton handkerchiefs. Mark: Chic. Owner: Tootal Broadhurst Lee Co., Manchester, Eng.

55,589. Cambrics, sheetings, etc. Mark: Garner. Owner: Garner Print Works & Bleachery, Wappingers Falls, N. Y.

57,713. Artificial silk skein yarn. Mark: Lustrone. Owner: Wm. H. Horstmann Co., Philadelphia, Pa.

58,025. Thread. Mark: Mero Silk. Owner: Dieckerhoff, Raffloer & Co., New York.

58,737. Spool cotton and sewing thread. Mark: Bernia. Owner: The American Thread Co., Jersey City, N. J.

58,993. Spool cotton and sewing thread. Mark: Sangallia. Owner: The American Thread Co., Jersey City, N. J.

59,143. Silk thread, machine twist and sewing silk. Mark: Gold coin. Owner: The Nonotuck Silk Co., Florence, Mass.

29,764. Knit undershirts. Mark: Reubens. Owner: Rubens & Marble, Chicago, Ill.

40,534. Yarn for knitting. Mark: Rococo. Owner: Bernhard, Ulmann & Co., New York.

49,643. Handkerchiefs. Mark: Old Homestead. Owner: Cochrane Mfg. Co., Dedham, Mass.

53,391. Woolen Yarn. Mark: Schneestern. Owner: Norddeutsche Wollkaemmerei & Kammgarnspinnerei, Bremen, Germany.

58,090. Cotton domets and flannels. Mark: Salunda. Owner: Brogon Mills, Anderson, S. C.

58,597. Cotton piece goods. Mark: Massabesic. Owner: Amoskeag Mfg. Co., Manchester, N. H.

58,751. Hosiery. Mark: Fairy. Owner: The Pittsburgh Dry Goods Co., Pittsburgh, Pa.

58,920. Hosiery. Mark: Bob-White. Owner: Carter, Webster & Co., Baltimore, Md.

VAPOR CONDENSATION TROUBLES

BY J. W. H. MYRICK, Ventilating Engineer, Boston, Mass.

In the dry house or dye house steam or moisture gives no trouble during the heat of summer, because the temperatures outside and inside are nearly equal, but in the winter even the boiling tea kettle on the kitchen stove will fill the room with moisture, which condenses and runs down the windows and outside walls, and the steam in a dye house or dry house will do the same thing. The remedy is comparatively simple where the volume is small, as it can be condensed with little expense without fan or blower.

With large volumes in manufacturing processes, as a ventilating engineer, I recommend and advise twice the capacity in area of outlet for steam that is required for general ventilation. The main trouble is that few stop to think or realize that if air is removed it must be supplied, and don't short circuit air currents and get dead pocket conditions.

How many mills and factories install a fan to draw out the steam laden air and make no arrangements for an equal volume to take its place. I am frequently asked why an Autoforce Air Pump is able to do the work of a power fan and remove steam, while it looks like any ordinary ventilator. The answer is, common sense working with and not against the laws of nature. In very many cases there is no need to use power for ventilation. Steam bothers in winter because a high temperature and high humidity causes condensation on cold surfaces like roof timbers, etc. When the outside air at or near the freezing point is drown in to take the place of steam laden air removed, it cannot carry the moisture of the lighter and expanded air within, and the result is like squeezing a sponge. The cold air that comes in through the windows and doors makes all the trouble. If an adjoining room could supply warm, dry air, furnish an inlet from that point, and ventilate that room as well.

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*Ohio, Cleveland. N. J. Rich & Co. have equipped the new plant on Euclid Ave. near East 55th St., which has been under construction for several months. The new building gives four acres of floor space and is of the most modern construction, as described in an earlier report.

*Pennsylvania, Carbondale. The Carbondale Knitting Mills have taken possession of the 3-story brick building formerly used for office and storage purposes by the Van Bergen Foundry Co. $25,000 8 per cent. preferred stock has been issued and is being sold at par and carries a bonus of 25 per cent. of common stock. Marcus Frieder is president and E. M. Pack, treasurer.

Pennsylvania, Lykens. According to report, the plant of the Lykens Knitting & Mfg. Co. are again running on full time after being closed for about ten days, during which time a new boiler was installed. The company manufactures ladies' cotton seamless hosiery and seamless half hose on 50 latch needle and spring needle knitting machines.